

REVISION OF *SYMPETES* AND *HELEUS*: WITH  
 DESCRIPTIONS OF NEW SPECIES OF *TENEBRIO-  
 ONIDÆ* [COLEOPTERA].

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Revision of the genus *Sympetes* (Pasc., Journ. of Ent. ii., p.464).

**HISTORY.**—In 1866 Pascoe formed this genus for the reception of *S. Macleayi*. It is distinguished from *Heleus* by the anterior angles of the thorax not meeting in front of the head, and from *Saragus* by the mesosternum having no notch for the reception of the prosternal process. Pascoe does not appear to have examined the types of Hope and de Brême, or he would have included *S. contractus*, *S. testudineus*, and *S. Brêmei* of the former; and *S. gagates*, *S. orbicularis*, *S. rotundatus* and *S. subrugosus* of the latter author. This is the more curious, since he refers to *S. (Encara) tricastellus* White, as belonging to this genus, of which the type is in the British Museum. Moreover he described *Saragus patelliformis* (Ann. Mag. Nat. Hist. 1870, p.100), leaving it to Mr. Champion to point out that this species as well as *S. Duboulaii* Pasc., is a *Sympetes* (Trans. Ent. Soc. 1894, p.384). From de Brême's figure there is little doubt that *S. unicarinatus* Boisd., should also be included in this genus, though I do not know this species. In 1896, Lea described two species, *S. acutifrons* and *S. undulatus*.

Thus Masters' Catalogue contains only two names under *Sympetes*, viz., *S. Macleayi* Pasc., and *S. magister* Pasc., while Lea has added two under the genus. Of these four, two are, I consider, synonyms, while *S. magister* Pasc., is certainly not a *Sympetes* at all.

Ten species have been removed from other genera into this group, and three new species are herein described, making a total

of fourteen known species; all (except *S. unicarinatus* Boisd., from Kangaroo Island) being denizens of West Australia.

### S y n o n y m y.

(1) *S. tricastellus* Brême(*nec* White) = *S. contractus* Hope, = *S. gagates* Brême.

(2) *S. Macleayi* Pasc. = *S. tricastellus* White.

(3) *S. Duboulaii* Pasc. = *S. Brêmei* Hope.

(4) *S. undulatus* Lea = *S. testudineus* Hope.

(5) *S. magister* Pasc. = *Pterohelaeus Icarus* Carter, and is not a *Sympetes* (*vide infra*).

*S. tricastellus* Brême(*nec* White) = *S. gagates* Brême = *S. contractus* Hope.—Through the courtesy of Mr. H. Giles, of the Zoological Gardens, Perth, I have obtained a long series of *Sympetes* from that district. My own notes taken at the Hope Museum, and at the London Nat. Hist. Museum, with further valuable help given most generously by Mr. C. J. Gahan, enable me to affirm the above synonymy with some certainty. At first I was inclined to separate my specimens into two species, distinguished as follows, the larger A(19-20 × 14-15 mm.) very nitid, with smaller punctures on the elytra: the smaller B(16-18 × 11.5-12 mm.) with larger elytral punctures. Extreme forms of these are in the Macleay Museum, Sydney, A, (from Rottnest Island) labelled *S. tricastellus* White; B, labelled *S. gagates* Br. A. moreover, is more convex, with the lateral margins proportionately narrower, especially at apex. All the specimens of A are ♀, while those of B are ♂. A agrees very well with Brême's figure of *S. tricastellus*, B with that of *S. gagates*. Mr. Gahan writes, "The specimen you take to be *S. tricastellus* (Brême) agrees rather better than the smaller one with what we have as *S. contractus* Hope. I don't think your two specimens are really specifically distinct. Our set of specimens here are all more or less intermediate between the two, both as to size and punctuation of the elytra." The variations in form, especially sexual, are, therefore, probably responsible for this synonymy. *S. contractus* Hope, is evidently, by figure and description, one of these. Indeed,

Hope's note "it may be considered at a future period as forming a subgenus" seems to show that he did not know the two species described by de Brême, notwithstanding his reference to de Brême's monograph, and the statement that "several of the species were described from my coll." since the figures given by Brême would show the strong likeness. Moreover, there is an evident error in the dimensions given by Hope as "Long. lin.  $9\frac{1}{2}$ , lat. lin.  $3\frac{1}{2}$ ," while the figure (Trans. Ent. Soc. 1848) shows an insect  $9\frac{1}{2} \times 6$  lines (by taking the length as the standard). The above specimens A and B are therefore ♀ and ♂ of the species which must be known as *S. gagates* Brême.

*S. Macleayi* Pasc. = *S. tricastellus* White.—Mr. Gahan has had the Hope type sent from Oxford to compare with the Pascoe and White types in the British Museum. It is evident, both from Mr. Gahan's information and from White's description (Grey's Travels, App. p. 464) that de Brême was mistaken in his identification of *S. tricastellus* White. The first words of White's description are "Much larger than *E. gibbosus*, of a dirty brown, glossed, the wide margin of elytra flat." Here are three statements which apply to *S. Macleayi* Pasc., but not to *S. tricastellus* Brême. Mr. Gahan writes, "*S. contractus* Hope, is not the same as *S. tricastellus* White. It is much smaller, darker or more strongly chitinated; differs a good deal in shape of pronotum" (a rough sketch of each is sent). "The species figured by Brême as *S. tricastellus* White, looks very much more like *S. contractus* Hope, and Brême's *S. rotundatus* has, in the figure, a form very like that of *S. tricastellus* White, but is much smaller. *S. Macleayi*, Pasc., comes nearer to *S. tricastellus* White, than does *S. contractus*, but is somewhat more oblong and less rounded in form" [*S. Macleayi* Pasc., is often much rounded. H.J.C.]. "I think it possible that *S. rotundatus* is only a small *S. tricastellus*. Our biggest *S. tricastellus* is  $24 \times 20$  mm. I feel confident, however, that *S. contractus* Hope, is distinct from *S. tricastellus* White, but it appears to be *S. gagates* Brême, and *S. tricastellus* Brême (*nec* White)." From this it is evident (1) That *S. tricastellus* White, was not correctly identified by de Brême. (2) *S. Macleayi*

Pasc. = *S. tricastellus* White. The variability, especially sexual, in the form of the latter would easily cover Mr. Gahan's remarks on that point, while my measurements of specimens identified as *S. Macleayi* Pasc., are quite in accord with those of *S. tricastellus* White, in the British Museum. The remark as to *S. rotundatus* being possibly only a small *S. tricastellus* is especially strong evidence, since I have had some difficulty in separating *S. rotundatus* from *S. Macleayi* except by size. *S. tricastellus* White, was described from King George's Sound, not from Swan River as de Brême states of his species. Macleay has pointed out Pascoe's omission of the carinated prothorax in his species. There is considerable variation also in form, size, and convexity. Six specimens under observation vary from  $23 \times 18.5$  to  $27 \times 21$  mm. As in the other species of this group of *Sympetes* (B of table, *infra*), the male is smaller than the female, with the discal portion more convex, subapical margins narrower than on basal half. The apical spines on tibiae are shorter in the male. My specimens are from Albany and Kellerberrin.

*S. Brêmei* Hope = *S. Duboulaii* Pasc.—This synonymy has already been suggested by Lea and by myself. Mr. Gahan has corroborated this by a comparison of the types, and writes—"The type of the latter is a small black specimen, but shows no structural difference." My own specimens vary in colour from light brown to black, and this may be explained by immaturity. I am inclined to think that this species, like other sand-dwellers (e.g., *Scymena variabilis* Pasc.) may be of either colour when mature.

*S. undulatus* Lea = *S. testudineus* Hope.—Having seen the types of both at different times, I have only my memory to add to the evidence of their descriptions. Mr. Lea's note (These Proc. 1897, p. 586) as to the absence of the anterior tibial spur is scarcely sufficient to constitute a distinction. The geographical difference may be noted. *S. undulatus* is from Geraldton, *S. testudineus* is from Port Essington. Mr. Gahan writes—"S. undulatus Lea, is, I think, *S. testudineus* Hope, after comparing his description with the type of the latter." My own measurements



of the Hope Museum specimen do not agree with those given by Hope. Mine give  $20 \times 15$  mm., while Hope's description (incorrectly quoted by Macleay as  $8\frac{3}{4} \times 7\frac{3}{4}$  lines) gives  $8\frac{3}{4} \times 6\frac{3}{4}$  lines.

*S. magister* Pasc. = *Pterohelæus Icarus* Carter = *Saragus magister* Pasc.—Suspecting this species to be out of place amongst *Sympetes*, and my evidence suggesting the above synonymy, I sent a specimen of my *P. Icarus* to Mr. Gahan, who writes—“*S. magister* Pasc., is, as you correctly surmise, a true *Saragus*, with mesosternum hollowed out for reception of the prosternum. The specimen you send appears to be the same species, allowing for a certain amount of variation. It is a little larger than either of Pascoe's two specimens, with the prothorax a little more expanded at the sides, and the margins more convex. Your specimen also shows some rows of very small punctures on the front half of the disc of the elytra. . . . It is certainly conspecific with one of our two specimens. The other (the actual type described) differs in having no punctures on the elytra, except the row at the junction of the explanate border.” This must, I think, establish the above synonymy. Together with *P. Darwini* Lea, lately examined by me, through the courtesy of Mr. Lea, *S. magister* forms a valuable link in the chain connecting *Pterohelæus* with *Saragus*. The short metasternum in both, with the merely rudimentary wings, clearly separate them from *Pterohelæus*, while it is probable that a dissection of fresh specimens of many species of *Saragus* would show some approximation to these rudimentary wings. As it is inadvisable to create a new genus on so (to my mind) insufficient a character, both species must at present be referred to *Saragus*. I have not, however, been able to find these wings, so far, in *S. Pascoei* MacL., (the nearest in general facies to *S. magister* Pasc.). The wings in *S. magister* extend about half-way from base to apex, and less than half-way from sides to suture, being attached near the shoulders. The species has a wide distribution over the inland parts of South Queensland and New South Wales. My specimens are from Forbes and Toowoomba, and all have the fine punctuation noticed by Mr. Gahan, but omitted from my description (possibly obscured by grease at the time).

Notes.—*S. rotundatus* Brême. This species is very close to *S. Macleayi* Pasc., (*S. tricoellus* White), but is separated by evident and apparently constant differences of size. Specimens of both sexes from Perth measure 16-18 mm. long, while *S. tricoellus* White, varies from 23 to 27 mm. long, and is found near Albany. *S. rotundatus* is also more finely punctured, especially on the underside of the margins, which are, out of all proportion, very much more coarsely punctured in the larger species.

*S. subrugosus* Brême.—Identified from Perth, where it is apparently common, exactly corresponding to figure and description. This is possibly the insect referred to by Champion (Trans. Ent. Soc. Lond., 1894, p.384) as differing from *S. patelliformis* Pasc., "in having the prothorax more densely punctured and with sharper anterior angles." If I have identified *S. patelliformis* correctly, they are very different, the latter having a smoother surface, with the elytral costæ subobsolete, while in *S. subrugosus* they are quite evident.

*S. unicarinatus* Boisd., from Kangaroo Island.—I have seen the type in the Paris Museum, but have never seen any other specimen.

*S. orbicularis* Brême.—I have five specimens under observation, which seem to belong to this species. Three are from Kellerberrin, W.A., taken by Mr. Duboulay, junr.; the other two are labelled W.A., and are in the French Coll. of the Melbourne Museum. Here, as in the case of *Pterohelæus Guerinii* discussed by me (These Proceedings, 1909, p.123), there is a curious discrepancy between the dimensions in the description and the dimensions of the plate given in de Brême's Monograph. In the description, the dimensions are given as long. 19, larg. 16 mm., whereas the plate, if standardised by the length, gives  $19 \times 14$  mm.; there is the further mistake in the reference to the plates given in the description, fig.3 being (as correctly stated on the plate) *S. rotundatus*, fig.4, *S. orbicularis*. Following the plate, fig.4 as correct for the width, I have no hesitation in identifying *S. orbicularis* as the Kellerberrin insect. In only one specimen is the prolonged apex as distinct as in the plate.

The following are descriptions of three new species, together with a table to assist identification :—

SYMPETES BICOLOR, n.sp.

Widely ovate, shining, glabrous, discal portions of upper surface and borders of foliate margins piceous-black or brown; foliate margins above and below creamy-yellow; abdomen, under-side of disc, legs and antennæ reddish.

*Head*: labrum narrowed in front and evident, epistoma truncate and a little raised, front with a triangular ridge in front of eyes, the apex between the eyes depressed, transverse suture separating front from epistoma well marked, the whole evidently but sparsely punctured; antennæ not extending to base of prothorax, basal joints very slender and subcylindrical, apical four joints enlarged, 8-10 obconic, eleventh elongate-ovoid. *Prothorax* very transverse and flat ( $5 \times 13.5$  mm.), the discal portion occupying about one-third of the total width, greatest width at base, apex circularly emarginate, anterior angles strongly produced in front of the eyes, acutely dentate and pointing upwards, sides rapidly expanding in a wide curve, sinuate anteriorly, posterior angles very acute, slightly upturned and overlapping elytra; extreme borders wide, convex, reflexed on upper and lower margins except near anterior angles, base and apex with narrow dark reflexed border, base trisinate, foliate margins nearly flat and dotted with very shallow punctures; disc almost flat and rather uneven, with irregular depressions, central carina sub-obsolete but faintly defined near base by a depression on each side, the whole finely punctulate. *Scutellum* semicircular and keeled. *Elytra* wider than prothorax at base, wider than long ( $15 \times 16.5$  mm.); foliate margins nearly equally wide all round, widest at base where they are two-thirds of total width, slightly narrower at apex, humeral angles widely obtuse, sides slightly widening to about half-way, each elytron separately rounded at apex, borders concave, of same width as those of prothorax when viewed from the side and similarly reflexed above and below, foliate margins very thin and transparent, slightly undulate, with

humeral callus prominent and a less prominent convexity half way, closely dotted with shallow punctures: disc with suture strongly carinate throughout, and five fairly definite smooth costæ on each elytron; of these the first is a short postscutellary costa parallel to the sides of the scutellum, the next three, parallel and equidistant, extend from the humeral region, obliquely approach the suture, becoming obsolete on apical declivity, the fifth subobsolete, half-way between the fourth and the outside of disc; junction of disc and margins marked by a line of large punctures in a depressed line, these most evident towards apex, the extreme border of disc itself a little raised and crenulate; the intervals between costæ faintly rugose, coarsely and irregularly punctured. Abdomen finely and closely, underside of foliate margins coarsely punctulate, tibiæ armed at apex with two spines, one very long, under surface of legs rugose, tarsi and lower parts of tibiæ clothed with yellow hairs. *Dimensions*— $19 \times 16.5$  mm.

*Hab.*—Shark Bay, West Australia; sent by Mr. C. French.

I have two specimens, both, I think, ♀, generously presented by Mr. French. While evidently very close to *S. acutifrons* Lea (from Geraldton), the dimensions, especially the proportion of length to width, differ sufficiently to make a clear distinction; moreover, in Lea's species the margins are testaceous, while in *S. bicolor* they are a distinct cream-yellow in both specimens; *S. acutifrons* Lea, is described as having elytral interstices "irregular, feebly raised," in *S. bicolor* the costæ are evident. Type in author's coll.

I have since compared it with Lea's type, and find it evidently distinct in (1) the much stronger contrast of colours in disc and margins; (2) the much wider form, especially of explanate margins; (3) wider head with more truncate epistoma.

#### SYMPETES QUADRATUS, n.sp.

Widely and squarely oval, dull brownish-black, tarsi and upper surface of antennæ red.

*Head* wide, a little convex, with epistoma squarely truncate and overlapping the labrum, front angles squarely rounded and a

little reflexed. Eyes large, transverse, bordered in front by oblique moderately raised impression; front very minutely granulose; antennæ as in *S. Macleayi* Pasc. *Prothorax* very transverse, depressed ( $6 \times 16$  mm.), deeply and squarely emarginate, anterior angles almost (in one case quite) enclosing the head, anterior angles sharply rectangular, with extreme apex showing a tendency to form a tooth. Sides widely rounded, strongly reflexed, widest at the acute posterior angles. Base strongly bisinuate. Border wide in front (where it is notched in the middle) and sides, narrow at base. Viewed from the side, the edge is convex and continuous with the under surface, and narrower than that of the elytra. Margins very wide and covered with minute granules. Disc much smoother, almost obsoletely carinate towards apex, but raised into a narrow hump towards base. Discal portion 6.5 mm. wide. *Scutellum* transversely elliptical at base, apparently smooth. *Elytra* wider than long ( $14 \times 17$  mm.), squarely oval, greatest width behind the middle, a little narrower than prothorax at the shoulders, these widely obtuse; sides gradually expanding till near apical third, then rather abruptly rounded. Apex triangularly notched at suture. Margins not so wide as those of the prothorax, widest at shoulder (where they are slightly gibbous) and behind the middle, narrower at middle and apex through the bulging of the discal parts in these regions; finely and rather distantly granulose. Disc moderately convex throughout, rugosely punctulate, with three faintly indicated costæ about equidistant from one another, more or less parallel, becoming obsolete on apical declivity. Suture strongly carinate from base to the junction with margin, only slightly raised on apical margin. *Prosternum* minutely granulose, metasternum and abdomen finely rugosely punctured, the sculpture of abdomen appearing like a series of longitudinal scratches, reverse of margins coarsely punctate. The whole underside a dull black. Legs finely punctulate and with short scattered recumbent hairs of a reddish colour. Tibial spines shorter and thicker than in *S. Macleayi* Pasc. *Dimensions*—19.22 mm. long, 17.19.5 mm. wide.

*Hab.*—Shark Bay, West Australia.

Four specimens, all ♂, sent by Mr. W. Duboulay, junr. It is easily distinguished from its congeners by its extraordinary width and square shape. In this respect it is the widest beetle known to me. More convex than *S. Macleayi* Pasc., but less so than *S. gagates* Brême. Type in author's coll.

SYMPETES EXCISIFRONS, n.sp.

Almost circular, convex, coal-black above, antennæ and under-side opaque piceous-black, discal surface nitid, underside and legs sparsely clothed with short adpressed reddish hairs

*Head*: labrum not evident, epistoma widely truncate, its angles rounded in ♂, obtuse in ♀; behind this angle a distinct curved excision, sides then narrowing to the eyes (not raised as in *S. orbicularis* Brême, nor is frontal ridge so prominent), surface minutely but not closely granulose, eyes more widely separated than in *S. orbicularis*, antennæ stouter. *Prothorax* nearly four times as wide as long (length measured in the middle), widest at base, widely explanate, disc about as wide as the two margins combined, deeply arcuately emarginate in front, anterior angles very slightly rounded and obtuse (about 100°), extending almost to the excision in epistoma, sides circularly widening and forming a continuous curve with sides of elytra, border more strongly recurved than in *S. orbicularis* Br., posterior angles acute and overlapping elytra. Disc with central carina less evident than in *S. orbicularis*, surface apparently smooth and impunctate, foliaceous margins minutely granulose and nearly horizontal. *Scutellum* transverse, triangular. *Elytra* wider than long, widest behind middle, less convex than *S. orbicularis*, more convex than *S. quadratus*, strongly carinated at the suture throughout, disc much more coarsely and deeply punctured, with interstices irregularly transversely rugose, and with two or three subobsolete costæ on each elytron showing near base, the most evident of these, near the suture, continuous from base to apex; surface subglabrous, sparsely clad with minute black bristles; margins flat, wider than in *S. orbicularis*, with extreme border thicker

and more recurved, minutely granulose and separated from disc by a line of large lateral punctures. Underside a darker colour, but similar to *S. orbicularis*. *Dimensions*—♂, 15·5 × 13·5; ♀, 18 × 16 mm.

*Hab.*—Onslow, West Australia; sent by Mr. C. French, F.L.S.

Two specimens are under examination, one of either sex. This species is intermediate in form between *S. orbicularis* Brême, and *S. quadratus*. From the former it is differentiated, *inter alia*, by its wider and more circular shape, coarser sculpture of elytra, and its wider margins. These last are much narrower than in *S. quadratus*, which moreover has sharply defined rectangular anterior angles to the prothorax, and is altogether a flatter and larger insect. The excised head, immediately behind the anterior angles of the epistoma, should serve to identify this species. It is so distinct in the female specimen that I thought it was an accidental breakage, until the male showed a similar but smaller excision. The elytral sculpture of the three species is thus to be differentiated:—

*S. excisifrons*—punctures regular, clearly separated, round and deep; intervals coarse, shining, irregularly rugose.

*S. orbicularis* Brême—punctures irregular, large and small, but on the whole smaller, closer and less deep than in *S. excisifrons*; intervals showing no definite ridges on central portion and only slightly at sides.

*S. quadratus*—densely packed with small round punctures, the intervals more finely but more distinctly rugose than in *S. excisifrons*.

#### Table of *Sympetes*.

A. Explanate margins of elytra oblique, not horizontal, surface strongly chitinised.

*S. gagates* Brême=*tricastellus* Brême(nec White)=*contractus* Hope.

B. Explanate margins flat and horizontal, surface less chitinised.

a. Explanate margins of elytra together as wide as disc at base.

b. Anterior angles of prothorax acutely produced.

c. Form very wide (margins of elytra 3·5 mm.).....*bicolor*, n.sp.

cc. Form narrower (margins of elytra 2 mm.).....*acutifrons* Lea.

bb. Anterior angles not acute.





Section i. has already been discussed by Blackburn, and his suggestion that the study of the external margin of the prothorax and elytra would give valuable results is fully endorsed by the present writer. I regret the want of opportunity of examining his types closely, as it is doubtful if he has always allowed enough for the natural variations of the variable species of this genus. Thus *H. aridus* Blackb., seems to me to be the same, or at most but a variety of *H. princeps* MacL.(Hope?). The distinction drawn by the author of the first, lies in the absence of the carina on the prothorax of *H. aridus*, which is present in *H. princeps*. In the Macleay Museum are two specimens labelled *H. princeps* Hope, by Macleay. In one of these this carina is distinct, in the other specimen it is almost obsolete. They are from the same district, and are evidently conspecific. There is a large collection of duplicates from the interior of South Australia, which show the same variation. This fact throws some doubt as to the value of *H. aridus* Blackb., as a distinct species, and can, I consider, only be admitted as a variety of the species passing for *H. princeps* Hope. Another character—that by which *H. lubricus* Blackb., is distinguished from the two preceding in the table—is “sutural carina of elytra (viewed from the side) being parallel with the edge of the lateral margin and straight in the middle (about half) part of its length.” This character, depending only on the convexity of the disc, might be and is often only a sexual difference, and without several examples should not be used to differentiate species.

*H. subseriatus* Blackb., and *H. elongatus* Blackb.—The author distinguishes between these by the elytral punctures of the former being extremely fine, and of the latter very distinct. I have had several specimens identified readily as *H. subseriatus* from Nungarra, W.A. (sent by Mr. Giles), and one specimen which I identify as *H. elongatus* from Kalgoorlie. These species, though closely allied, are, I consider, quite distinct.

*H. Brownii* Kirby.—This species was omitted by Mr. Blackburn from his table. There is a specimen in the Macleay Museum which is, I believe, correctly identified. The lateral

edge of prothorax is concave, as wide as that of the elytra and faintly rugulose. The elytra have rows of small, distant pustules. There is an evident subsutural costa near scutellum, the others obsolete. The basal tooth on prothorax is sharp, erect, and subconical, while the carina in front is subobsolete. Dimensions,  $20 \times 11$  mm.

Section ii.—*Elytra pilose or tufted.*

There are five species so far described, on which I append short notes.

*H. perforatus* Latr., is the original type of the genus. I have taken specimens at Perth, and have examined the type in the Paris Museum. It is well known in all collections by its four rows of long black hairs.

*H. Kirbyi* Brême.—I have a specimen from N. W. Australia, easily to be distinguished from *H. perforatus* by the following characters—Form more regularly elongate-oval (less enlarged posteriorly), margins narrower and more horizontal, tufts of hair shorter, more sparse and red; prosternal keel more elevated and nitid, especially between the coxæ.

*H. Spencei* Brême, possibly a variety of the former, has its elytra much wider than the thorax.

*H. Spinola* Hope, differs from all others of the genus in that the anterior processes of prothorax do not meet in front. Macleay therefore placed it in the *incisus*-group of *Saragus*. Having seen the type in the Oxford Museum, I have no doubt as to its being a true *Heleus*, and am inclined to consider it as an aberrant form of *H. perforatus*. I have never seen any other specimens.

*H. fulvo-hirtus* Lea, is much smaller than the preceding. Lea gives  $20 \times 14$  mm. as the dimensions, but a specimen in the Macleay Museum, presented by Mr. Lea, measures  $19 \times 12$  mm. The prosternum is rounded, not carinate, the elytra finely punctured.

Section iii.—*Elytra bicostate.*

Synonymy.—*H. falcatus* Pasc., = *H. Perronii* Boisd.(?) As in most cases, Boisduval's species are impossible to identify by

description, the one useful fact therein being its locality, Kangaroo Island. De Brême redescribed it, giving a figure, as from Swan River. It seemed improbable to me that this distribution, and, therefore, identification was correct. I was unable to find Boisduval's type in the Paris or Brussels Museums, but Mr. Gahan has kindly sent me a specimen labelled *H. Perronii* Boisd., from the British Museum for examination, with the locality-label of Kangaroo Island (A. H. Davis). This specimen is identical with specimens in the Macleay Museum, and Mr. Lea's collection, as *H. falcatus* Pasc., and corresponds exactly with Pascoe's description. It is probable that Pascoe relied on de Brême's monograph, already shown to be fallible in the case of *Sympetes tricastellus* White. Until Boisduval's type is shown to be identical with de Brême's, it is preferable to assume that the two insects described from Kangaroo Island are the same. It is thus possible that one of the new species described below may be the insect figured and described by de Brême as *H. Perronii* Boisd.

*H. consularis* Pasc.—I have two specimens, exactly corresponding to the author's description, from Kellerberrin, W.A., taken by Mr. Duboulay, junr., and one from Norseman, W.A., which differs only in the prothoracic processes not meeting. I consider this last only a variety. In these Proceedings, 1889, p.1269, Mr. Blackburn has some doubt as to the distinction between this species and *H. moniliferus*. Macleay also notes that it was unknown to him. The following comparison of prominent characters will therefore be useful :—

*H. consularis* Pasc.

Form obovate, widest at shoulders.

Elytral costæ not parallel or approximate.

Pronotal carina reaching base.

Prosternal keel not raised at apex, smooth behind and rounded between coxæ.

*H. moniliferus* Pasc.

Form ovate, widening behind shoulders.

Costæ much closer, parallel for greater distance.

Pronotal carina not reaching base.

Prosternal keel sharp, even, produced behind.

I have examined many specimens of *H. moniliferus* in the Macleay Museum, which are cotypes of those sent to Pascoe by Mr. Masters from South Australia. I have received specimens from Mr. Goudie from Sea Lake, N.W. Victoria.

*H. ellipticus* Lea, is easily differentiated from the former two, by its elongate-ovate form, the sides being parallel behind the shoulders. The prosternal keel is strongly raised throughout, is notched, bifid, and wedge-shaped at apex, and strongly produced behind coxæ; the elytral costæ are crenated only on the outside (on both sides in the former two species), and there is a raised border round the eyes with a sulcus intervening between it and the eyes. Mr. Lea has kindly lent me his type for examination. My specimens are from Condon and Mt. Margaret, W.A.

*H. castor* Pasc.—This species, and its ally *H. Georgei* Cart., are much flatter than the rest, with the prosternal keel obsolete. The under side of the prothoracic flange of *H. castor* is thickly pitted with large punctures.

*H. squamosus* Pasc.—Specimens compared with cotypes in the Macleay Museum have the front angles rounded and overlapping, with the elytral costæ terminated on the apical declivity. The four apical joints of antennæ are distinctly broader than the rest. My specimens are from Cunnamulla, Q.; Mildura, Vic.; and Tarcoola, S.A.

*H. Derbyensis* MacL., compared with what, I presume, is the type, though unmarked as such in the Macleay Museum. The front angles are acute and scarcely overlapping, the pronotal carina smaller and more uniformly elevated. The last three joints of antennæ are not broader than the rest, while the elytral costæ are continued almost to the apex. The suture is slightly carinate at apex, though Macleay says it is not. My specimens are from Condon, N.W. Australia, taken by Mr. Giles.

In both the last two species the prosternum is nearly flat.

*H. Mastersi* Pasc.—There is a specimen labelled Salt R. (W.A.) in the Macleay Museum which, Mr. Masters assures me, is a cotype of the specimen sent to Pascoe. If this be so, Pascoe's description is in error in stating that it is "furnished above with

short erect black bristles" (Ann. Mag. Nat. Hist. Ser. 4, Vol. v., p. 99). This specimen, which is exactly similar to one sent by Mr. Duboulay, junr., to me from West Australia (unlabelled), is furnished above with distinct red bristles, but otherwise corresponds to the description. I am unwilling to doubt the evidence of so accurate an entomologist as the veteran Curator, and have written to the British Museum for information on this point. In reply, Mr. Gahan writes, "*H. Mastersi* Pasc., has distinct bristles of a rather darkish or rusty *reddish* colour, not black."

*H. sparsus* Cart., (*infra*) is particularly interesting as forming a link connecting Sections ii. and iii., having the long tufts of hair as in Section ii., with the bicostate elytra of Section iii. There are two specimens in the Melbourne Museum, identified by myself.

Section iii. *Elytra bicostate (suture sometimes costate).*

- A. Size large, 20-24 mm. long, elytral costæ not (in general) parallel (subparallel in *H. moniliferus*).
- B. Form widely ovate, margins wide.
- C. Elytra widest at base..... *consularis* Pasc.
- CC. Elytra widest at, or behind, middle.
- D. Colour brilliant nitid-black, prosternum not carinate.  
*spinifer*, n.sp.
- DD. Colour subnitid-brown, prosternal carina sharp.  
*moniliferus* Pasc.
- BB. Form elongate, elytral margins narrower.
- C. Elytra glabrous.
- D. Elytral costæ extending nearly to apex of disc, prosternal carina bifid at apex..... *ellipticus* Lea.
- DD. Elytral costæ terminating on apical declivity, prosternal carina subobsolete anteriorly..... *approximatus*, n.sp.
- CC. Elytra sparsely pilose, hairs long..... *comatus*, n.sp.
- CCC. Elytra squamose.
- D. Anterior prothoracic processes rounded at apex, elytral costæ terminated on apical declivity..... *squamosus* Pasc.
- DD. Anterior processes acute at apex, elytral costæ continued almost to apex..... *Derbyensis* MacL.
- AA. Size medium, 15-18 mm. long. Elytral-costæ parallel or nearly so.
- B. Form widely ovate.

- C. Prothoracic carina forming a double, or triple, curve (seen sideways).
- D. Form rather flat.
- E. Margins horizontal, equally wide all round. .... *castor* Pasc.
- EE. Margins slightly concave and undulate, costæ more approximate ..... *Georgei*, n.sp.
- DD. More convex, explanate margins of elytra narrowing to apex.
- E. Anterior prothoracic processes blunt.
- F. Upper surface strongly bristled.
- G. Bristles red..... *Mastersi* Pasc.
- GG. Bristles black.
- H. Pronotum nearly smooth..... *Gilesii*, n.sp.
- HH. Pronotum pustulate..... *occidentalis*, n.sp.
- EE. Anterior prothoracic processes acute (falcate) { *Perronii* Boisd.  
  *falcatulus* Pasc.
- BB. Form less widely ovate.
- C. Prothoracic carina forming a single curve (seen sideways).
- D. Surface not bristled..... *rugosipennis*, n.sp.
- DD. Surface densely bristled..... *opacicolis*, n.sp.
- BBB. Form elongate-ovate.
- c. Elytral costæ entire.
- d. Surface nearly smooth..... *Macleayi* Brême.
- dd. Surface with tufts of long hair..... *sparsus*, n.sp.
- cc. Elytral costæ broken into nodules posteriorly..... *Frenchi*, n.sp.
- AAA. Size small, 8-11 mm. long.
- b. Elytral costæ parallel.
- c. Anterior prothoracic processes overlapping..... *granulatus* Lea.
- cc. Anterior prothoracic processes not meeting..... *Haagi* Bohrn.
- bb. Elytral costæ not parallel..... *Hopei* Brême.

Section iv., at present contains only one species, herein described as *H. crenatipennis* mibi.

Section iv. *Elytra quadricostate*.

*crenatipennis*, n.sp.

Section v.—*Elytra tuberculate.*

Consists of four described species, but they are perhaps the most difficult of all to identify or classify with any real definiteness. Taking them in order of priority of description, they are *H. oratus* Guérin, *H. tuberculatus* Brême, *H. echinatus* Hope, and



*H. horridus* Blackb. So far as I am aware, this group is confined to New South Wales and Victoria, but enjoys a wide range over this area. I have examined a very large number of specimens, and have twenty-two specimens before me now. It may be doubted whether the four are not merely geographical varieties of the same species; but for the present I will note my own observations on the differences noted in the types inspected, and in the specimens observed.

*H. ovatus* Guér., is the largest of the four, and the only one having distinct costæ, two on each elytron, the first a short scutellary costa, the second more or less parallel to this, both being uninterrupted or non-nodulose, at least, on basal part of disc. The outside edge of elytra (seen sideways) is very thin and laminate, but a little recurved; while the extreme edge of the prothorax is wide, convex, and so much recurved as to be nearly horizontal. My note on inspecting the specimen in the Hope Museum is, that it is only a variety of *H. echinatus* Hope. My largest specimen, from Cowra, N.S.W., measures  $17 \times 12$  mm.; other specimens from Mulwala and other parts of New South Wales are normal in size.

*H. tuberculatus* Brême.—I do not think I have seen the type of this, but, from de Brême's figure, it appears to be the form commonly found throughout the whole of New South Wales. I have specimens from Mudgee, Muswellbrook, Camden, Guntawang, Baan Baa, etc., varying in length from  $10\frac{1}{2}$  mm. to 14 mm. They can be distinguished from the other three species by Mr. Blackburn's test as to the comparison of the extreme margins of the prothorax and elytra. Alone of the group, this species (if I am correct in my identification) has the extreme edges of the elytra, seen sideways, more or less concave or flat, and similar to, though sometimes slightly narrower than, those of the prothorax, which are narrower and much less upturned than in *H. ovatus* Guér. The tubercles are also smaller than on the other species, and, in general, round.

*H. echinatus* Hope.—The type or cotype of this is probably the specimen referred to by Sir W. Macleay (These Proceedings,

Ser.2, Vol.ii., p.649) and which I have closely examined in the Macleay Museum. It is labelled *H. echinatus* Macleay, N.S.W. I have specimens exactly like it from Mount Macedon and other parts of Victoria. The edges of the elytra are thin, as in *H. ovatus* Guér., those of the prothorax wide and upturned. The tubercles of the elytra are larger than in *H. tuberculatus* Brême, the short scutellary costa is nodulose or broken, and the large seriate punctures are more evident than in the other species. The form is in general narrower than in *H. tuberculatus*. The figure given by Hope is of little use for distinguishing the main points of difference between this and the other species.

*H. horridus* Blackb., is not aptly named, since *horridus* suggests spines, while the description evidently refers to "tubercles" only, on the elytra. These tubercles are larger than in any of the preceding. I have three specimens, taken by myself near Mt. Kosciusko, which correspond to Mr. Blackburn's description. The author only states of the locality that "the South Australian Museum possesses a single specimen, probably taken in South Australia." The extreme edges of the prothorax and elytra are as in *H. ovatus* Guér., and *H. echinatus* Hope.

#### Section v. *Elytra tuberculata*.

- A. Edge of elytra (seen sideways) concave or flat ..... *tuberculatus* Brême.
- AA. Edge of elytra (seen sideways) laminate.
- B. Elytra costate. .... *ovatus* Guér.
- BB. Elytra not costate (in general).
- C. Elytral tubercles small..... var.(?) *echinatus* Hope.
- CC. Elytral tubercles large.....var.(?) *horridus* Blackb.

#### HELEUS PERRONII Boisid.

##### *H. falcatus* Pasc.

Widely oval, convex, pitchy black, prothorax opaque, elytra rather nitid, antennæ and tarsi piceous, the former reddish at apex, underside black, slightly nitid.

*Head*: labrum emarginate, epistoma nearly flat, truncate in front, angles widely obtuse, epicranium not much depressed, eyes approximate, surface minutely shagreened, antennæ much shorter

than prothorax, third joint as long as fourth and fifth combined, 8-10 oval and flattened, eleventh obovoid and longer than tenth. *Prothorax* (5 × 9 mm.) widest at base, length measured to apex of anterior process, sides narrowing in a curve from base to apex, a little sinuate anteriorly, posterior angles acute, slightly produced and deflected at the tips, anterior processes narrowing to a point, gradually rising above the plane of prothorax and exactly meeting vertically above the middle of the head (not produced in front of head) with their edges vertical at their junction [this character is not constant, and subject to variation], each process separately rounded or falcate, and recurved at the apex; foliate margins wide, concave, separation from disc marked by sulcate depression in front only, extreme border thick and reflexed from above (seen sideways, thin and continuous with under surface). Disc convex and carinate, the line of carina, seen sideways, forming a triple curve, or trisinuate line, the posterior equiangular triangular tooth much the most prominent part, with posterior edge oblique and continuous to base; surface of disc and margins closely pustulose, base closely fitting elytra and crenulate. *Scutellum* transversely semielliptic, finely punctured and non-carinate. *Elytra* as wide as long (10·5 mm.), oval, widest behind middle, slightly narrower than prothorax at base, apex a little produced, shoulders obtuse-angulate, the angle emphasised by strongly raised border ending abruptly at middle of basal side, vertical near shoulder but gradually becoming explanate at apex; foliate margins of same width as those of prothorax at base, gradually narrowed and obsolete at apex, slightly gibbous at base, convex behind, extreme border reflexed and much thinner than that of prothorax (seen sideways it is much thicker than it and convex, the lower edge carinate and below the plane of undersurface); disc tricostate, the suture and two subparallel costæ strongly raised; of these the suture less raised, continuous from base to apex, the other two little divergent at base, very slightly convergent and abruptly terminated on apical declivity, crenulate on both sides; surface lineate-punctate, the part between costæ containing two rows of large punctures at intervals of

about the diameter of one of them (besides the large punctures on the sides of the costæ), between costæ and margins the punctures much smaller, but still lineately arranged, disc and margins clad with very short reddish hairs, on each side a line of spiniform pustules situated considerably above the junction with margins; prosternum convex, cylindrical between coxæ; abdomen smooth, minutely punctured; tibiæ hairy, apical spines small. *Dimensions*—13·15 × 9·10·5 mm.

*Hab.*—South Australia and Kangaroo Island.

HELEUS SPINIFER, n.sp.

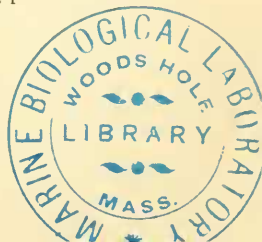
Widely elliptic-ovate, glabrous, moderately convex, entirely black; the whole, except head and margins of prothorax, brilliantly nitid, antennæ piceous, tarsi clothed with red tomentum.

*Head*: labrum emarginate, fringed with red hair; epistoma truncate, angles rounded, with strongly raised ridge separating epicranium from forehead continuous with frontal ridge (between the eyes); epicranium depressed and sparsely punctured; eyes large, transverse, separated by space less than 1 mm.; antennæ extending to the base of prothorax, third joint cylindrical, as long as fourth and fifth combined, succeeding joints successively wider to apex. *Prothorax* (8 × 14 mm.), length measured to apex of anterior process, width at base, sides moderately rounded, faintly sinuate in front, incurved and produced posteriorly into a distinct tooth, anterior processes just meeting, regularly narrowing, on both edges, at the apex into a U-shaped termination, enclosing head in an oval of 3 mm. diameter; foliate margins wide (margins : disc as 3 : 7), raised near base, rather flat and obliquely raised in front, extreme margin vertically raised and strongly thickened posteriorly, surface of margins opaque, very minutely roughened and separated from disc by irregular depression. Disc convex, depressed along anterior edge (extreme border slightly raised); edge, seen sideways, thin; two large foveate depressions near base, strongly carinate at centre, carina not continued to apex and terminated posteriorly by a long spiniform tooth, produced obliquely backwards, surface smooth and

impunctate, curve of carina (seen sideways) continuous. *Scutellum* semielliptic, raised in middle. *Elytra* as wide as long (16 mm.), widest behind middle, of the same width as prothorax at base, sides gradually widened, widely rounded at apex, humeri (seen from below) obtusely angulate; seen from above, the angle formed by thickened raised border is rounded; foliate margins as wide as those of prothorax at base, only slightly narrowed at apex, gibbous at shoulders, horizontal at sides, more convex at apex, extreme border very thick and strongly reflexed, edge (seen sideways) deeply concave and much wider than that of prothorax. Disc convex, apparently impunctate, separated from margins by a row of round pustules continuous from behind humeral callus almost to apex of costæ; with strongly raised costa on each elytron extending from base to apex of disc, diverging at base, gradually converging on steep apical declivity, again a little divergent near apex (3.5 mm. apart at base, 2 mm. distant at apex), costæ crenulate on sides, the suture slightly raised from middle to apex, sulcate on each side, the depression widening towards apex into a concavity between suture and costæ, and containing a single line of punctures rather widely separated. Abdomen finely, not deeply punctured, underside of legs opaque and slightly rough, tibiæ coarsely punctured, sparsely clad with red recumbent hair and strongly hispidose. Prosternum convex in front, cylindrical between coxæ. *Dimensions*—22 × 16 mm.

*Hab.*—West Australia.

A single specimen, probably female, in the French Collection of the National Museum, Melbourne. It is very distinct from any described species by its combination of large size and polished ebony-black colour. Though widely differing from *H. consularis* Pasc, it is perhaps nearer that species than to others, but may readily be distinguished by its more brilliant polish, by the spiniform prothoracic carina, by its more parallel elytral costæ, and by its widely oval form. (*H. consularis* is obovate, widest at shoulder, *H. spinifer* widest behind the middle). Type in the National Museum, Melbourne.



## HELEUS APPROXIMATUS, n.sp.

Elongate-ovate, glabrous, piceous-black, subnitid, almost impunctate above, underside piceous with margins and legs lighter colour.

*Head* with labrum slightly emarginate and fringed with reddish hair, epistoma truncate and reflexed, minutely granulose, eyes almost contiguous, centre of forehead in front of eyes depressed, antennæ rather slender, joints 9 and 10 shorter but not wider than the rest, eleventh elongate-ovoid, mentum cordate and longitudinally carinate. *Prothorax* transverse ( $8 \times 11\frac{1}{2}$  mm.), widest at base, uniformly narrowing to apex, much less convex than *H. ellipticus* Lea, margins widely reflexed, thickly bordered at base, border becoming gradually obsolete towards apex, anterior angles acute and overlapping at the points, posterior angles acute, markedly dentate and produced downwards, anterior processes minutely punctate near the edge. Disc impunctate, with central carina more uniform and less elevated than in *H. ellipticus*, not extending to either margin, and less strongly "beaked" behind; base strongly trisinate, with margin closely serrated. *Scutellum* widely triangular, concave and defined by raised border, punctulate. *Elytra* ovate, subparallel on the anterior half, a little narrower than prothorax at base, humeral angles subdentate, obtuse (about  $100^\circ$ ), concave margins less wide than those of prothorax, with reflexed border on sides only continued for a short distance at base and becoming gradually attenuated to a thin line at apex; edge of border (viewed sideways) strongly concave, this lateral channel narrowing from base to apex, but distinctly narrower than in *H. ellipticus*. Disc with suture evidently carinate towards apex, less so anteriorly (except on sides of scutellum), with two strongly raised carinæ on each side of the suture, these carinæ finely sinuate when viewed closely, slightly curved outwards at the middle, and terminated near the summit of the apical declivity; a row of small lateral pustules beginning behind the humeral callus and obsolete on apical curve. Prosternal keel moderately raised, not notched, but



punctulate between the coxæ, and produced hindward into a distinct subvertical tooth; anterior segments of abdomen with longitudinal lines of very minute granules, apical segments finely rugosely punctate; legs rugose and finely granulated on the outside, thickly clothed on the inside with reddish hair. *Dimensions*— $20 \times 11.5$  mm.

*Hab.*—Onslow, West Australia.

A single specimen (♀) kindly sent by Mr. C. French. An evident ally of *H. ellipticus* Lea, it can readily be separated from that species by (1) much less convex form; (2) more narrowly pointed prothorax with more acute anterior angles; (3) dentate posterior angles to prothorax; (4) elytral carinæ terminated considerably before the apex; (5) slenderer antennæ, especially of apical joints; (6) prosternum less raised in front and dentate behind. Type in author's coll.

#### HELÆUS COMATUS, n.sp.

Elongate-ovate, black, nitid; antennæ, palpi and tarsi piceous red; whole upper surface finely, sparsely and irregularly granulose, each granule bearing a long whitish hair.

*Head* immersed in thorax beyond the eyes, flat, minutely punctate, and granulose, labrum emarginate, epistoma subtruncate; antennæ long, extending to base of prothorax, third joint about equal to fourth and fifth combined, three apical joints globular and successively larger, eleventh much the largest. *Prothorax* ( $7 \times 9.5$  mm.), length measured to the apex of anterior process, width at base, anterior processes acute, just meeting at tips, and enclosing head in a transverse oval 3 mm. wide, sides arcuate anteriorly, a little sinuate behind, posterior angles very acute, dentate with tooth deflexed, base strongly trisinate, central lobe produced backward; foliate margins wide (especially the anterior portion), inclined obliquely upwards, posteriorly reflexed at extreme margin, surface minutely and sparsely granulose and pilose only near base; extreme margin (seen sideways) widely concave, becoming laminate at apex, distinctly punctate, basal edge of margins and disc strongly serrated; disc



moderately convex, central carina interrupted anteriorly and not extending to apex, at base forming a widely rounded hump, with posterior extension produced downwards into a distinct "beak" overhanging the base; seen from above this carina posteriorly widened, convex, and punctate. *Scutellum* triangular, strongly ridged in the middle. *Elytra* ( $12 \times 9.5$  mm.), base trisinate and serrated, less wide than prothorax, humeri rectangular and dentate at their lower margin, the upper raised margin more obtuse and rounded, sides subparallel, slightly widened behind the middle, a little acuminate at apex; foliate margins moderately wide and horizontal at base, becoming narrow, subvertical, and continuous with disc before middle, extreme border thickened, crenulate and little raised, seen sideways concave, wide as that of prothorax at base, gradually narrowing to apex, with double border thick and nitid. Disc depressed at base, convex behind, bicostate, a thick crenulate carina on each elytron, these 3 mm. apart, outwardly directed in front, subparallel for the greater part, narrowed, converging, and abruptly terminated on apical declivity, suture nowhere raised, a line of round pustules extending from behind shoulder, then growing smaller hindwards and becoming obsolete before apex. Prosternum widely carinate, carina transversely notched, nitid, bifurcate, and terminated at base by two round shining pustules; strongly produced backwards and received into a deeply U-shaped mesosternal cavity, this cavity itself bordered by a raised notched margin, metasternum with similar but less raised carina than that of prosternum; abdomen finely granulose, interstices closely and minutely punctate, whole undersurface, legs, palpi and antennæ strongly pilose, the flavous hair longest on legs and sternum, tibiæ strongly spinose, legs (especially tibiæ) long. *Dimensions*  $19 \times 9.5$  mm.

*Hab.*—Minilya, West Australia (Mr. T. Warr).

The above very interesting addition to the genus is represented by a unique male specimen in the French Collection of the National Museum, Melbourne, and bears a label inscribed "Menilya, W. Aust., pres. by T. Warr, 1902." It is very

distinct from other members of the bicostate group, though (very superficially) nearest to *H. ellipticus* Lea. It is, however, narrower, in proportion to length, than *H. ellipticus*, while its detailed structure is very different. The prothoracic margins take a wide sweep forward, and the long, sparse, pale yellow hairs above, and the thicker and darker clothing beneath, make this species easily identifiable.

HELEUS GEORGEI, n.sp.

Widely ovate, rather depressed, dark brown, moderately nitid, with edges, costæ, oral organs, and tarsi reddish, antennæ and tibiæ pitchy-red.

*Head* narrowly rounded in front, with epistoma reflexed and limited behind by a straight transverse suture, forehead flat, minutely pustulate, eyes approximate; antennæ extending beyond base of prothorax, third joint as long as fourth and fifth combined, 8-10 round, eleventh wider and longer than preceding, ovoid. *Prothorax*  $4 \times 10$  mm., width at base, length in middle, flat and depressed on disc, margins widely perfoliate, together half as wide again as disc, nearly semicircular in outline, faintly sinuate towards apex, base bisinuate, anterior processes overlapping, narrowing but rounded at apex, posterior angles acute and produced backward, extreme margins strongly raised, outside edge (seen sideways) concave; foliate margins increasingly concave towards apex, disc minutely punctate, pustulate and clothed with very short reddish hair (very sparsely so on margins); base and apex with thin, raised, reddish border, disc with central carina bicurved, little raised, and not continuous to base or apex. *Scutellum* raised, strongly transverse and elliptic. *Elytra* much wider than prothorax, widest at middle, foliate margins wide and slightly undulate, their planes a little inclined upwards, very little narrowed at apex, faintly punctulate; extreme edge (seen sideways) concave, slightly wider than that of prothorax, forming a reflected margin subobsolete at apex; disc with two sharp subparallel costæ strongly raised, slightly divergent at base, abruptly ending on apical declivity and narrowly separated (about 2 mm.);

suture also costate but less raised than preceding, surface of disc closely, coarsely and confusedly punctured, with two equidistant lines of punctures between the costæ and margins, interrupted and confused with the rest at base and apex, but forming with the rugose intervals two short indistinct lines near centre; a row of lateral punctures placed in a deeply indented sulcus; epipleuræ and overlapping sides of sternum very coarsely punctured, with intervals rugosely vermiculate; abdomen finely rugose, with faint longitudinal strigose aspect. Legs normal. *Dimensions* 16 × 12.5 mm.

*Hab.*—King George's Sound, West Australia.

A unique specimen, female, in the Macleay Museum, labelled *H. Perronii* Boisd.; but this identification is in glaring defiance of the description and figure as given by de Brême.\* It is evidently nearest to *H. castor* Pasc., in its ovate form and depressed thorax, while it differs from that species in (1) smaller size, (2) less circular form, (3) closer elytral costæ, etc. I have named it after the veteran Curator, Mr. George Masters, while its name will also suggest its habitat.

#### HELÆUS GILESII, n.sp.

Broadly ovate, convex, nitid, black above, piceous-black beneath, tarsi and apical joints of antennæ reddish.

*Head* with labrum emarginate and truncate, with rounded angles, epistoma truncate and rather flat, rounded at the sides, epicranium forming a subtriangular plate between and continued in front of the eyes on the same plane as the eyes, part between this and the epistoma rather abruptly depressed; eyes large, separated by less than 1 mm., antennæ not extending to the base of prothorax, third joint cylindrical and slender, 4-7 obconic, slightly increasing in width, 8-11 subspherical, forming a club much wider than the rest, eleventh largest and not at all pointed. *Prothorax* transverse (6 × 10 mm.), width measured at base, length

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\* The above was written before receiving the (I believe) true *H. Perronii* from Mr. Gahan. *H. Georgei* is still further removed from this species.

in the middle to apex of anterior process, glabrous, not perceptibly punctured on disc, minutely bristled on margins, widest near base, then narrowed, a little sinuately to the apex, slightly incurved at the posterior angles; anterior processes acute, overlapping at the points, enclosing the head in a circle of 2 mm. diameter, posterior angles acute and dentate, foliate margins together about half the width of disc, gibbous at the base, concave anteriorly, with the edge thin, rounded and raised, continuous with the under surface; base strongly trilobed, the discal lobe curved backwards and meeting the marginal base in a wide but distinct angle, the marginal base coarsely serrated; base and apex not apparently margined. Disc with central carina not reaching apex, rising strongly in a double curve and forming a large blunt tooth near base, with its posterior outline subvertical (not beaked or overhanging). *Scutellum* transverse, triangular, and depressed. *Elytra* nearly as broad as long ( $12.5 \times 11.5$  mm.), widest behind middle, humeral angle defined and obtuse, sides a little incurved at shoulder, then very gradually widening to apical third, widely rounded at apex, the apices of elytra very slightly produced and separately rounded, foliate margins as wide as those of the prothorax at base, narrowing to half-way, and narrowest at apex, subhorizontal at base, more oblique and concave towards apex, with extreme border strongly raised and infolded at base; border reflected at sides, nearly flat at apex, with edge (seen sideways) flat, slightly grooved, and wider than edge of prothorax, but narrowing at extreme apex. Disc convex, coarsely punctured, with some indications of a linear arrangement, and, together with margins, thinly clad with fine short black bristles; the suture, and one on each side of suture, forming three equally raised parallel costæ; of these the sutural costa is continued from base to apex, the discal costæ extending from base to the summit of the apical declivity and distant about 3.5 mm. apart, all three costæ having a line of large punctures at each side on the elytra. *Abdomen* more densely but less coarsely punctured than elytra, legs (especially tibiæ) rugose and finely granulated and bristled, apex of tibiæ strongly bispinose (longest on the fore tibiæ), tarsi

beneath clothed with reddish tomentum. Prosternum slightly convex; with raised border extending around the coxæ, hind margin subvertically produced; submentum closely punctured. *Dimensions*  $18 \times 11.5$  mm.

*Hab.*—South Perth, West Australia; collected by Mr. H. Giles.

Four specimens are before me, one ♂, the rest, I think, ♀, sent by that very observant naturalist, Mr. Henry Giles, of the Zoological Gardens, South Perth, to whom I am much indebted for these and other specimens, and after whom I name this insect. From *H. rugosipennis* Carter, it differs in its broader form, smoother and more nitid prothorax (with its double humped carina), and the bristly clothing of its elytra. Type in author's coll.

HELEUS OCCIDENTALIS, n.sp.

Wider and more convex than the preceding (*H. Gilesii*), and of a more nitid black on the upper surface.

*Head* wider than in *H. Gilesii*, with upper surface dotted with small pustules, triangular impression in front of eyes bisected by distinct longitudinal sulcus, extending to base of eyes; antennæ stouter, especially the basal joints. *Prothorax* ( $6 \times 11$  mm.) bearing minute setigerous pustules on disc and margins, widest at base, narrowing more abruptly, and more sinuate towards apex than *H. Gilesii*; posterior angles acute, dentate and deflexed at point, but not incurved, anterior processes widely rounded and overlapping, enclosing the head in an ellipse whose major (transverse) axis is 2 mm. Width of combined margins to disc at base as 5 : 6, these more concave than in *H. Gilesii*, with the edge more thickened and not continuous with under surface; base trilobed, marginal base very finely serrated, not margined. Disc with central carina not reaching apex, more strongly raised in a double hump (i.e., with frontal declivity much steeper) and forming a high rounded tooth near base, with posterior outline less vertical than in *H. Gilesii*. *Scutellum* transverse, triangular, and raised. *Elytra* broader than long ( $11 \times 12.5$  mm.), widest behind middle, humeral angle rounded, not defined, sides scarcely incurved at base, apices separately rounded, foliate margins wider than those

of prothorax at base, gradually narrowing to apex, but flatter than in *H. Gilesii*, extreme borders subvertical or slightly outwardly oblique, with edge (seen sideways) concave, wider than the edge of prothorax and perceptibly wider than in *H. Gilesii*, especially near apex. Disc very convex, finely and more closely punctured, with no indication of a linear arrangement except by two faint lines of larger punctures equally and widely separated; the punctures bearing short black bristles; three strongly raised costæ arranged as in *H. Gilesii*; discal costæ 4 mm. apart, the junction of margins with disc also indicated by a slightly raised interrupted costa, outside which is a row of large lateral punctures (much larger than any on *H. Gilesii*). *Abdomen* very minutely and densely punctate, under side of margins with larger punctures (in both cases finer than in *H. Gilesii*); otherwise similar to *H. Gilesii*. *Dimensions* 17 × 12.5 mm.

*Hab.*—Shark Bay, West Australia.

Two specimens, both ♂, are before me, sent by Mr. C. French, F.L.S. A close ally of *H. Gilesii* mihi, it differs most in its shorter, wider form, greater convexity, much more abrupt apical declivity of discal parts, its wider and more horizontal elytral margins, more nitid surface, finer and more irregular elytral sculpture, besides the other differences noted above. Type in author's coll.

HELEUS RUGOSIPENNIS, n.sp.

Oval, convex, almost glabrous, subopaque black above, piceous and more nitid beneath.

*Head* nearly round in front, rather narrow, epistoma not convex, epicranium little depressed, antennal orbits not prominent, eyes approximate, antennæ much shorter than prothorax, third joint shorter than fourth and fifth combined, apical five joints considerably wider than preceding, seventh and eighth larger than ninth and tenth respectively, these two short and transversely elliptic, eleventh largest and oval. *Prothorax* (of ♂) 5 × 8 mm., widest at base, length measured to apex of anterior



process, sides sinuately narrowed to apex, posterior angles acute, produced a little backwards and downwards into a short tooth, anterior processes slightly overlapping, hollowed and narrowly rounded at extreme point, enclosing head in a circle of less than 3 mm. diameter; foliate margins concave, strongly reflexed at border, edge (seen sideways) thin and continuous with under surface; disc convex, with central carina rising in a single curve to its highest point near, but not at apex, posterior edge of carina descending in a steep declivity to base, head and prothorax minutely and closely pustulose, base strongly trisinate, edge not crenulate. *Scutellum* transversely triangular and a little raised in middle. *Elytra* (9 × 9 mm.) ovate, widest at middle, of same width as prothorax at base, apex of each elytron separately rounded; shoulders obtusely angulate, foliate margins as wide as those of prothorax at base, narrowing to apex, concave for the greater part but horizontal, not gibbous at base; extreme edge reflexed, seen sideways narrow, convex, of same width as those of prothorax and continuous with under surface; surface of margins sublævigata. Disc very convex, tricostate, with the suture and two subparallel costæ forming strong ridges of almost equal height; sutural costa continuous from base to apex, the other two scarcely divergent at base and very little convergent and abruptly ending on apical declivity, crenulate on sides; between these costæ and the sides are two subobsolete costæ continuous from base almost to apex, the junction of disc with margins marked also by crenulate impression, on the outside of which is the line of large lateral punctures: whole surface of disc coarsely and irregularly foveate-punctate, without linear arrangement, intervals coarsely, subreticulately rugose. Prosternum little raised, posterior process flat and sulcate at sides, abdomen minutely shagreened, under side of femora smooth, tibiæ rugose, not hairy, apical spines small. *Dimensions*, ♂ 14 × 9 mm.; ♀ 16 × 10 mm.

*Hab.*—Bridgetown, West Australia (Mr. H. M. Giles).

Two specimens are under observation, for which I am indebted to the enthusiasm and generosity of Mr. Giles. The species is



distinguished by its almost glabrous surface, besides the other characters described above. With a strong lens, very minute bristles may be detected on the elytra, but they are in marked contrast to the evident clothing of all the preceding species described by me. The female specimen is larger, and has its anterior processes more recurved and a little wider at the apex than the male, so that the apical part of the head is covered; in the male, they are more extended, so that there is some clear space between them and the front outline of the head. Types in author's coll.

HELEUS OPACICOLLIS, n.sp.

Broadly ovate, very convex, head and prothorax opaque, elytra subnitid, upper and lower surface black, antennæ and palpi slightly piceous.

*Head* with labrum narrowly truncate in front, straight at sides, epistoma truncate, not reflected, and arched (from front view); sides a little raised, widening in a straight line to the antennal orbits, front with epicranium raised, anterior portion depressed to the plane of the epistoma, without suture to define these regions; the whole upper surface of head and prothorax closely and distinctly granulose; antennæ not extending to base of prothorax, third joint subcylindrical, as long as the fourth and fifth combined, 4.7 wider and subtriangular, 8-10 much wider than the preceding and round (8th larger than 9 or 10), eleventh largest of all, widely ovoid. *Prothorax* more convex than in *H. Gilesii*, glabrous, nearly twice as wide as long ( $5.2 \times 10$  mm.), foliate margins more concave, rugose and narrow, width of disc to combined margins as 3 : 2, the anterior processes rather narrow, widely overlapping, acute and incurved (falcate) at the points, enclosing the head in a transverse ellipse ( $1.5 \times 3$  mm.), sides gradually narrowing from base to apex, with apex more blunt and incurved than in *H. Gilesii*, a little incurved at posterior angles, these acute, dentate, and overlapping elytra; outside edge raised and reflexed (seen sideways, very narrow and round), basal margin not apparently serrated. Disc very convex, with central carina starting near apex, rising to an elevated flattened hump

near base, with posterior outline steeply sloping (not overhanging) to the base. *Scutellum* transverse, triangular, and granulose. *Elytra* very convex, as wide as long (11 mm.), widest behind middle, shoulders bluntly rounded, foliate margins wide and concave at base, strongly narrowing towards apex, becoming horizontal in that region, extreme edge (seen sideways) wider than that of prothorax, concave and gradually narrowing from base to apex, obsolete behind; margins and disc closely set with short upright black bristles. Disc strongly tricostate, sutural costa extending from scutellum to apex; two parallel costæ, one on each elytron (3.5 mm. apart), more strongly raised than sutural costa at base, abruptly ending on apical declivity, coarsely and irregularly punctulate on disc, margins impunctate, with faint indications of raised longitudinal lines on disc outside costæ, and a more or less continuous line of raised linear granules on the outside of disc, forming a low crenulate costa. *Abdomen* very finely and longitudinally rugosely punctate; under side of margins coarsely punctulate, prosternum transversely rugose, submentum finely granulated; legs (especially tibiæ) thickly granulated, tibial spurs much shorter than in *H. Gilesii*; prosternum convex, with posterior process rounded and margined, and only slightly produced. *Dimensions* 16 x 11 mm.

*Hab.*—Perth, West Australia.

A single specimen(♂), sent by Mr. W. Duboulay. A specimen in the Macleay Museum is paired with another species labelled *H. Mastersii* Pasc. It is superficially like both *H. Gilesii* and the specimen from Salt River, W.A., which, Mr. Masters assures me, is a cotype of *H. Mastersii* Pasc.; but the last has red bristles (though described with black), and the side edge of pronotum is concave and equally as wide as that of the prothorax; with wider anterior processes to the prothorax, and wider lateral margins; *H. opacicollis* is strongly differentiated from *H. Gilesii* by its opaque granulated head and prothorax, *inter alia*.

#### HELEUS SPARSUS, n. sp.

Elongate-ovate, subparallel, depressed, subnitid, piceous-black, with foliaceous margins yellowish on the prothorax and in

patches on the elytral margins; antennæ, palpi, and tarsi reddish, with apical joints of the first lighter.

*Head* finely rugose, with only a portion of the eyes and forehead not covered by the prothoracic processes; labrum red, truncate and protuberant; eyes round, large, flat, close, and coarsely faceted; antennæ nearly extending to base of prothorax, third joint cylindrical and thinner than the succeeding, as long as the fourth and fifth combined, 4-8 obconic, gradually more transverse 9-10 widely oval, eleventh largest and spheroidal. *Prothorax* transverse ( $5 \times 9$  mm.), glabrous, widest at base, narrowed semi-circularly to apex, anterior processes widely truncate at apex, and just overlapping, the perforation enclosing head forming nearly a complete circle of 2 mm. diameter, with the basal margin a little intrusive; foliate margins wide, with raised thickened border obliquely flattened on its edge, posterior angles acute and closely fitting base of elytra; margins finely punctured and granulose, base of margins strongly serrated; disc rather flat, minutely rugose, with central carina uniformly raised (not dentiform) from base almost to apical margin, the former thinly, the latter not perceptibly bordered. *Elytra* parallel for two-thirds of their length, longer than broad ( $11 \times 10$  mm.), more convex than prothorax, with flattened foliate sides of the same width as those of the prothorax, slightly narrowed at apex, shoulders rather square with the extreme angle rounded, apex squarely rounded, border strongly raised, with oblique edge of the same width as that of prothorax and a little concave; disc furnished with two strongly raised subparallel costæ very close together (less than 1 mm. apart), extending from the base almost to apex of disc, a little divergent at base, and convergent and closely approximate at apex, near which they abruptly end, suture faintly carinate near apex only; outside the costæ on each elytron four rows of thinly arranged tufts of long piceous hair, the external rows closer than the rest, each tuft consisting of two or three coarse upright hairs curved at the tips, with about fifteen such tufts in a single row, otherwise glabrous; disc coarsely and irregularly lineate-punctate. *Abdomen* glabrous,

and rugose with a tendency to longitudinal strigosity, prosternum distinctly carinate, produced hindward and rounded at hinder apex. Legs very rugose, inside of tibiæ and under side of tarsi lined with short reddish hair. *Penis* longitudinally sulcate above. *Dimensions* 16 × 10 mm.

*Hab.*—Onslow, West Australia. Sent by Mr. C. French, F.L.S.

A single specimen, ♂, entirely differing from all the other tufted species, with its strongly raised elytral costæ more approximate than in any of the costiform species, though nearest to *H. Macleayi* Brême, in this respect. The yellow markings on the margins may be individual and due to immaturity, but their transparency is due to the thin structure of this part. Type in the author's collection. There are two specimens in the French Collection, Melbourne Museum.

#### HELEUS FRENCHI, n.sp.

Elongate-ovate, black, very nitid and smooth, antennæ and legs piceous, the former with apical joints red.

*Head*: labrum evident, epistoma truncate in front, with blunt angles, sides a little raised towards the antennal orbits, limited behind by a straight transverse ridge; behind this the front triangularly raised, the triangle defined by raised impression with apex between the eyes, its base formed by transverse ridge; this triangle depressed in the middle. Eyes nearly contiguous, large and oblique. Antennæ at rest not reaching base of prothorax, third joint less than fourth and fifth combined, 4-7 obconic, 8-10 round, eleventh ovoid. *Prothorax* transverse (6 × 8 mm.), circularly emarginate, disc rather flat except at the strongly raised central carina, sides angulately raised, so that (viewed sideways) the outside margins are considerably higher than the discal carina; widest at base (in ♀ slightly in front of base), then gradually arcuately narrowing (a little sinuate anteriorly) to apex; anterior processes hollow, terminating in a rounded point, just crossing (in ♀ not quite meeting), posterior angles acute, produced backwards into a blunt tooth (viewed sideways, these denticulate angles, though deflexed at the apex,

are seen to be raised above the rest of the margins); margins wide with border strongly raised and reflexed, generally concave, especially near border, with a convex swelling within at about half-way; surface of margins a little transversely wrinkled. Disc slightly concave anteriorly, raised posteriorly, finely punctured, punctures more evident towards the sides; central carina two-lobed, anterior part not extending to apex, with outline low and uneven, posterior lobe much more raised into a round protuberance with its hinder edge subvertically terminated some distance from base. *Scutellum* very transverse and not prominent. *Elytra* narrowly oval, convex longitudinally and transversely; as wide at base as prothorax, then gradually enlarged to behind the middle. Shoulders prominent, obtuse, and reflexed; explanate margins much wider in front than behind, strongly reflected and deeply channelled at junction with disc, concave at humeral region, with two raised callosities occupying the full width of margins, the anterior of these more prominent and ridged than the posterior; border of margin itself rather widely reflexed and vertical. The border itself (viewed from the side) a little concave, with a fine sulcus defining the lower rim, this also deflected below the undersurface. Disc with suture carinate throughout, and two strongly raised subparallel costæ, one on each side of and rather close to the suture, the space between them widening a little at base, the costæ broken up into denticulate nodules behind and terminated on reaching apical declivity; about half-way between the costæ and lateral gutter is a short row of shining pustules, obsolete at base and apex, a second row of closer and smaller pustules on the discal side of gutter itself. A row of punctures along each side of sutural carina and costæ, and a row of larger punctures at sides of disc, the disc itself (between the costæ) and explanate margins minutely punctulate. Under side of margins of prothorax rather rugosely, of elytra coarsely punctulate, punctures round; prosternum with epimera finely transversely strigose, prosternal process with prominent subcylindrical keel, received into mesosternum by semi-circular groove; abdomen finely rugose, scarcely punctulate and

glabrous; femora and tibiæ finely punctured, tibiæ very sparsely and tarsi moderately clothed with reddish hair, tibiæ armed with two short spines at apex. (In ♀, hind tibiæ perceptibly longer).  
*Dimensions* ♂  $17 \times 9.5$ ; ♀  $20 \times 10.4$  mm.

*Hab.*—Phillips River district, West Australia.

I am indebted to that enthusiastic and indefatigable collector, Mr. C. French, of the Victorian Department of Agriculture, for a pair of the above distinct species, which I have great pleasure in dedicating to him in appreciation of his services to entomology. While belonging to the same group as *H. echidna* White, and *H. Macleayi* Brême, it differs markedly from each; the elytral costæ of *H. Frenchi* replacing the spines of the former, while the costæ of the latter are much less prominent, and not broken up into teeth behind, with the many other differences shown above. Types in the author's coll.

#### HELEUS CRENATIPENNIS, n.sp.

Oblong, subparallel, opaque, rusty-brown, thickly clothed with squamose pile above, surface beneath pile and underside opaque, pitchy-black, tarsi reddish.

*Head*: labrum narrowly produced, epistoma rounded and slightly raised, separated from forehead by arcuate ridge, front convex; eyes widely transverse and narrow, separated by a space equal to the width of an eye (diameter of minor axis), eyes bordered by smooth black surface ovally widened in front. Head as well as the prothorax and elytra thickly clothed with short brown squamosity. Antennæ piceous, much shorter than the prothorax, third joint not as long as the fourth and fifth combined, scarcely enlarged towards apex, with four apical joints rounded, eleventh bluntly pointed. *Prothorax* transverse ( $6 \times 8$  mm.), widest at base, thence arcuately regularly narrowed to the anterior processes, the latter narrowly acute, not furrowed in the middle and not quite meeting; posterior angles acute (about  $75^\circ$ ) and very little produced backwards; foliaceous sides wide, slightly deflexed at base, their plane gradually rising and border more reflexed anteriorly. Disc moderately convex and strongly carinate

in the middle, carina interrupted about half-way by depression, with its hinder lobe (seen from the side) widely oval in outline (not pointed) and produced behind. *Scutellum* triangular. *Elytra* of the same width at base and half as long again as the prothorax, shoulders rectangular and subdentate, sides a little narrowing behind shoulder, then subparallel till near apex, with border regularly crenulated, except near apex, explanate margin flat, widest at shoulder, then narrowed rather suddenly and continued of uniform width to apex; each elytron with two costæ equidistant from the suture, each other, and the sides respectively; the first strongly rising in abrupt curve from basal margin, becoming less raised posteriorly, abruptly ending on apical declivity; the second starting from well behind the shoulder, then parallel to the first and terminating at the same distance from apex; the suture itself carinate from the middle to a little behind the termination of the other four costæ. The whole undersurface thickly clothed with stout brown upright hairs, prosternum a little transversely strigose towards the sides; femora and tibiæ thickly clothed with fawn-coloured recumbent hair; tibiæ shortly spinose at the apex. *Dimensions* 15 × 8 mm.

*Hab.*—Port Darwin.

I have received, through the kindness of Mr. C. French, a single male specimen. It is quite distinct from the other described squamose species by its crenulate-sided and 5-costate elytra, *inter alia*. Type in the author's coll.

#### ENCARA LATUM, n.sp. (Fig. 1.)

Widely ovate-cordate, chestnut-brown, glabrous, moderately nitid; antennæ and palpi red, underside pale red.

*Head* transversely oval, epistoma flat, rounded, and slightly raised at sides, eyes large, separated by a space less than the diameter of one, forehead coarsely, epistoma finely punctate; antennæ extending beyond base of prothorax, third joint less than the fourth and fifth combined, apical five joints successively widening and thicker than preceding. *Prothorax* (3 × 12 mm.) length measured in middle, width at base, width between



anterior angles 3 mm., disc very little wider than each margin at base; circularly emarginate at apex, anterior angles subrectangular but blunt at tips, sides a little sinuate but rapidly widening to base, posterior angles acute and overlapping elytra, base trisinuate; foliate margins wide, horizontal, with outside part (not extreme edge) slightly reflexed, narrow raised border only apparent at apex, edge (seen sideways) laminate; disc rather flat, central line indicated by depression near centre and base, two large irregular depressions near sides at base, disc and margins finely and closely punctured, with some indications of longitudinal lines on disc and oblique wrinkles on margins. *Scutellum* curvilinear or triangular, coarsely punctate. *Elytra* wider than prothorax at base, widest near middle, abruptly narrowing to apex, foliate margins very wide, slightly gibbous near humeri, and a little convex for the greater part of width, outside portion recurved, this portion narrowed and horizontal at base, wider and concave at apex; disc with suture carinate, and six obscure costæ on each elytron becoming obsolete at apex, of these the second and fourth more strongly raised; whole surface of disc and margins closely and finely punctate, and a single row of large punctures at junction of margins with disc from base to apex. Prosternum carinate, coxæ enclosed by dark raised border, posterior intercoxal process narrowly triangular; abdomen very nitid and minutely punctate, apical segment a little strigose, under side of margins rather coarsely punctured, tibial spurs short, hind tarsi with basal joint as long as the rest together. *Dimensions* 16 × 14 mm.

*Hab.*—North-west Australia.

A single specimen, male, in the Macleay Museum, distinguished from its congeners by its subcordate form; the deeply immersed head, wide prothorax, and very wide elytral margins

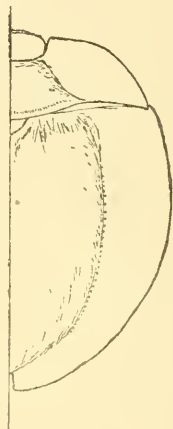


Fig. 1.

rendering its identification easy. The combined margins of the elytra are to the disc as 3 : 4.

*PTEROHELÆUS SOLIDUS*, n.sp.

Widely and somewhat elongate-ovate, very convex longitudinally and transversely, deep black, nitid, antennæ and apical joints of tarsi reddish.

*Head*: transversely elliptic, with labrum prominent, truncate and subrectangular, fringed with golden hair and closely punctured; epistoma strongly reflexed and hollowed within, regularly and widely rounded in front and on sides, with finely marked suture starting in front of eyes, continuing obliquely outwards to margin; eyes large, separated by a space about equal to their greatest diameter; distinctly but rather distantly punctured on front, closely punctured towards the sides. Antennæ stout, third joint as long as fourth and fifth combined, with apical four joints nearly round and wider than the rest. *Prothorax* almost smooth or almost imperceptibly punctured, moderately convex, and transverse ( $5 \times 12$  mm.), width measured at base, length in middle; deeply semicircularly emarginate at apex, bisinuate at base, sides a little rounded arcuately converging to apex, width across anterior angles 4mm.; anterior angles widely rounded (less widely than in *P. Walkeri* Brême), posterior angles acute and slightly deflexed, foliaceous margins moderately wide, outer edge reflected. *Elytra* slightly wider than and more than three times as long as prothorax, very convex, with apical declivity steeply inclined from behind the middle, apex rather sharp with each elytron diverging and submucronate at apex (bluntly produced); punctate-striate, each elytron with seventeen deep striæ, besides a short scutellary stria, containing rows of unevenly placed large round punctures, intervals convex and minutely punctured, the fourth and eighth wider and more raised than the rest, the suture also slightly raised towards apex, the outside striæ containing large punctures, about seven (largest of all), more widely separated, near the humeri; the margins narrower than those of prothorax and horizontal with narrow outside border

slightly reflexed at sides, margins narrowing behind middle (caused by slight bulging of disc); underside very nitid, strongly longitudinally strigose, apical segment of abdomen finely punctured; prosternum arched, sharply carinated throughout its whole length; tibiae and tarsi thickly clothed with fulvous hair. *Dimensions* ♂  $20.5 \times 13$  mm : ♀  $22 \times 14$  mm.

*Hab.*—Rockhampton and Gogonga, Queensland.

I received the ♂ specimen from Mr. H. Brown, who took it at Gogonga; since then Mr. C. French has sent me another specimen from Rockhampton, which proved to be ♀. Compared with *P. Walkeri* Br., it is far more convex; seen sideways, a vertical line to its highest point from the elytral margin measures about 6 mm., while a similar line in *P. Walkeri* Br., measures 3 mm. Its outline, seen thus, is a strong oval with its posterior part steeper, the prothorax and head forming a continuous curve with the elytra. This character, combined with its deeply and almost evenly striated elytra and comparatively narrow elytral margins, make this species easy to identify. Types in author's coll.

PTEROHELEUS UNDULATUS, n.sp.

Widely ovate, moderately convex, glabrous, opaque, piceous, the margins paler, underside reddish, epipleurae, antennae, and legs ferruginous.

*Head*: labrum emarginate, ciliate in front, punctate above; epistoma widely bisinuate, with apex concave, not reflexed in front and but slightly raised at sides; angles widely rounded, limiting suture, strongly indented at sides and base, a little produced forward in middle and extending to the sides; antennal orbits almost continuous with sides of epistoma, little raised and abruptly constricted behind, front gently sloping toward suture; entirely smooth and impunctate; antennae extending to base of prothorax, stout, third joint less than fourth and fifth combined, apical four joints transverse and oval, eleventh elongate-ovoid, bluntly rounded at apex. *Prothorax* ( $4 \times 11.5$  mm.), length measured in middle, width at base; depressed, arcuate-emarginate at apex, anterior angles widely rounded and produced to middle

of canthus, sides widening in a regular curve to near base, then a little narrowed, not sinuate, at the acutely undentate posterior angles; base trisinate, foliate margins wide (at base together nearly equal to width of disc), nearly horizontal, extreme borders very thick and round at sides (seen sideways very concave and carinate above and below), obsolete at base and very narrow at apex; disc with central line faintly indicated near base, very minutely punctate (only apparent under high power lens), with some obscure foveæ at base, the most evident of these one at middle, and one near each side. *Scutellum* transversely triangular, minutely punctate. *Elytra* widely oval, depressed in front, convex near apex, wider than prothorax at base, widest near middle, sides very gently curved and widely rounded at apex, shoulders subangulate and obtuse, foliate margins wide, subhorizontal and very gradually narrowed to apex, reflexed border not so thick as that of prothorax (seen sideways, of same or even greater width than that of prothorax, carinate below, folded above), smooth and impunctate, junction with disc marked by row of large punctures becoming smaller from base to apex, immediately above this a row of smaller punctures on sides of disc becoming obsolete behind: disc with six obscure broad and little raised costæ on each elytron, their ridges forming distinct undulating (almost 'zig-zag') lines, obsolete at apex; between these are very faint indications of minute lineate punctures, seen more distinctly near suture. Pro- and mesosternum minutely granulose, anterior coxæ with square carinate border, abdomen and femora very minutely punctate, tibiæ slightly pilose, under surface of tibiæ and tarsi clothed with golden tomentum. *Dimensions* 17 x 13 mm.

*Hab.*—Stanthorpe, South Queensland.

A single specimen (♀) has been received from Mr. C. French. It is evidently distinct from all described members of Macleay's first section of the genus. Of a more widened oval form than *P. piceus* Kirby, with more convex disc, wider and more horizontal margins. The sculpture is somewhat obscure, presenting the appearance of flattened crenulate costæ, of which four are most

evident on the centre of disc. It is the smoothest of all the species in this section. The form, especially the front outline, of the epistoma is unusual. Type in the author's coll.

*PTERHELÆUS SEPTEMCOSTATUS*, n.sp.

Elongate-oval, parallel, depressed, opaque-black, the elytral costæ and underside more nitid, antennæ and tarsi piceous.

*Head* nearly hexagonal, with front outline of epistoma a little concave and arched, upper surface of the same flat, not reflected; a slight depression (more distinct at sides) separating epistoma from front, eyes rather small, transverse, and widely separated, the whole scabrous or finely shagreened; antennæ extending to two-thirds of the prothorax, third joint shorter than fourth and fifth combined, 4-7 successively wider and rounder, 8-10 spherical, eleventh bluntly ovoid. *Prothorax* moderately convex ( $3 \times 5$  mm.), length at middle, greatest width behind middle, semicircularly emarginate at apex, with anterior angles rounded but produced in front of eyes, sides moderately rounded, gently, not sinuately, converging towards the acute backwardly produced posterior angles; base bisinuate, outside border only faintly visible at sides and apex; foliaceous margins wide and horizontal, without distinct gutter separating the disc. Disc in general (not in all specimens) showing faint traces of central channel, with two shallow foveæ at base and slight depression in scutellary region, the whole surface scabrous and shallowly punctured, presenting a shagreened appearance, slightly longitudinally rugose anteriorly, smoother on foliaceous margins. *Scutellum* triangular, finely punctured. *Elytra* flattish, very little wider than prothorax at base, and three times its length, subparallel throughout the greater part of their length, humeri rather sharply rectangular, foliaceous margins subobsolete and narrowly bordered, each elytron with three nitid equidistant costæ besides the sutural costa, the former parallel for the greater part, the two outside (first and third) costæ approximately converging on apical declivity, the middle one shorter, ending abruptly; the sutural costa wider, less raised, continuous to apex, bifurcating on each

side of scutellum; between this and scutellary margin a short row of about eight large punctures; between each of the costæ are four rows of regularly and closely placed round punctures; between the outside costæ and the margins the rows of punctures less regular and distinct, except a single row of larger lateral punctures; the elytral punctures largest near suture and gradually smaller towards the sides. Abdomen punctured in the middle, longitudinally strigose towards sides, whole surface of sternum scabrous like upper surface of pronotum, femora punctate, apex of tibiæ and tarsi sparsely clothed with yellowish tomentum. *Dimensions* 12-14 mm. long;  $5\frac{1}{2}$ - $6\frac{1}{2}$  mm. wide.

*Hab.*—Port Darwin, and Camoweel (North Queensland).

Sixteen specimens are before me, sent by Mr. C. French, F.L.S. Both sexes are evidently present, the males in general being smaller, a little more convex, with anterior tarsi wider. An evident member of Macleay's Section ii., Subsection 1, it is distinct from the seven described species of that group. Its nearest ally is *P. crenulatus* MacL., but that species is smaller, with its costæ nodular, "the whole having a crenulate and clathrate appearance." In *P. septemcostatus* there is a faint indication of nodulation of the costæ at the apex only in some specimens, and a still fainter suspicion of crenulation, but it is very different from Macleay's species, with which I have compared it. Type in author's coll.

*PTEROHELEUS PUNCTICOLLIS*, n.sp.

Elongate-ovate, elytra rather depressed, prothorax opaque, elytra more nitid, brown-black, beneath reddish; antennæ black, apical joints piceous.

*Head*: epistoma finely, front coarsely and rugosely punctured, front and sides of epistoma nearly circular, not limited behind by definite suture, strongly widened and raised on antennal orbit, then abruptly narrowing to the eyes, these widely separated. Antennæ slender at base, with four apical joints much wider than preceding and flattened, 8-10 round, eleventh half as long again as the tenth, ovoid. *Prothorax* ( $4 \times 9$  mm.), length in

middle, greatest width behind middle, moderately convex, much wider at base than at apex, apex arcuately emarginate, anterior angles widely rounded, sides gradually rounded and widened till near base, then a little incurved at the falcate and acute posterior angles, these overlapping elytra, base strongly bisinuate, foliate margins wide and flat, extreme border not reflexed, margins finely roughened. Disc coarsely and closely punctured, the punctures shallow and becoming smaller at base and sides, intervals finely rugose, medial line indicated by smooth depression on centre of disc, basal foveæ represented by large shallow depressions. *Scutellum* curvilinear-triangular and sculptured as pronotum. *Elytra* ( $9 \times 11$  mm.), basal half subparallel, each with three distinct subcrenulate costæ extending from base to the apical declivity, the outermost of these thinner and more crenulate than the other two, the suture more widely but less raised throughout, the raised portion widening at the scutellary region; half-way between and exterior to these costæ are less raised lines; between the suture and the first costa are four lines of large round punctures regularly placed at intervals rather greater than the diameter of one of them, a short scutellary row of similar punctures; in the intervals exterior to the first costa the punctures indistinct, or concealed by the derm, with the exception of the rows of large punctures at the base of the costæ; foliate margins rather convex, much narrower than those of prothorax, and becoming obsolete at apex. Prosternum very convex and carinate, produced backward into a tooth, received by the metasternum, and dotted with small pustules, metasternum with strong medial sulcus, and, together with the underside of femora, finely punctured; abdomen finely longitudinally strigose and punctured, the last two segments punctured only. *Dimensions*  $16 \times 19$  mm.

*Hab.*—North-west Australia.

A single specimen in the Macleay Museum, probably ♀. It is evidently a close ally of *P. alternatus* Pasc., and *P. depressiusculus* MacL., but the former has its prothorax "minutely punctured" and "no groove," its elytra are said to be "finely seriate-



punctate," while the latter has its prothorax similarly differentiated as to sculpture, with the elytral punctures small except near the sides.

*PTEROHELEUS NODULOSUS* n.sp.

Elongate, subparallel, flattish, opaque rusty-black above, nitid below, underside of tarsi and terminal joints of antennæ reddish.

*Head* and pronotum densely and finely shagreened, base of forehead showing a number of minute shining nodules densely packed; epistoma truncate in front, sides oblique, little raised at the antennal orbit, without definite limiting suture; eyes widely separated and transverse, antennæ much shorter than prothorax, stout, hairy, third joint subcylindric, shorter than the two following combined, 4-7 successively shorter and wider, 8-11 nearly globular, 11th little longer than 10th. *Prothorax* ( $3 \times 7$  mm.) length in middle, width at base, apex semicircularly emarginate, sides regularly rounded and securiform, wider at base than apex, anterior angles prominent but widely rounded, posterior angles produced backward and acute (about  $75^\circ$ ), base bisinuate, margins wide but not differentiated from disc, surface uniformly rough, not punctured, and sparsely clad with short reddish hair, no central line. *Scutellum* equilateral triangular, rough. *Elytra* ( $8 \times 10.5$  mm.) each with three well marked interrupted costæ extending the greater part of length, nodulose towards apex, with intermediate rows of nodules less conspicuously raised but evident, the suture itself nodulose; surface coated sparsely with short brown down, and, like the pronotum, with short reddish hair thinly scattered; without evident punctures. Underside of head, prothorax, and femora shagreened; prosternum flat, abdomen thickly and coarsely punctured, tibiae densely bristled. *Dimensions*  $15 \times 8$  mm.

*Hab.*—Roper River, North Australia.

A single specimen, probably ♀, in the Macleay Museum. It is clearly distinct from all described species, though nearest to *P. crenulatus* Macl., (from Port Darwin). It is evidently much larger than Macleay's species, which is separated from it by its

differently sculptured elytra with its "rows of deep square closely placed punctures" The specimen has evidently lost much of the squamose clothing with which it appears to have been clad. It forms a connecting link between Macleay's Section ii., Subsection 1, and Subsection 2, since the smaller rows of nodules may be described as granular, while the larger form distinct costæ irregularly interrupted. There are three kinds of such rows, (i.) three equidistant interrupted costæ; (ii.) less raised lines of nodules intermediate and exterior to i.; and (iii.) still smaller lines of granules irregularly spaced but generally evident between and exterior to ii. Type in Macleay Museum.

Table of *Pterohelæus* (Macleay's Section i.).

Species of broadly ovate form, and largely expanded margins to both thorax and elytra.

- a 1. (15) Intervals of elytra costate, size large (more than 20 mm. long).
- 2. (11) Anterior angles rounded.
- 3. (19) Length to breadth about 3 : 2.
- 4. (9) Elytra at middle as wide or wider than at base.
- 5. (14) Alternate intervals of elytra more prominent.
- 6. (9) Elytra subparallel on basal half.
- 7. (7) Lateral angles of head raised. .... *Walkeri* Brême.
- 8. Lateral angles nearly flat. .... *riverinæ* MacL.
- 9. Lateral angles dentate. .... *cornutus* MacL.
- 10. Elytra obovate, costæ crenulate or notched. .... *Brêmei* MacL.
- \* 11. Elytra not at all parallel, their margins very wide. .... *costatus* MacL.
- 12. (14) Anterior angles of prothorax acutely produced.
- 13. Apex of elytra mucronate. .... *spinicollis* MacL.
- 14. Apex of elytra not mucronate. .... *acuticollis* MacL.
- 15. All intervals equally raised, convexity twice that of 7. .... *solidus*, n.sp.
- β Evident costæ fewer, less raised than in group a, size less than 20 mm. long (except *P. abdominalis* Lea).
- 16. (19) Elytra not parallel.
- 17. Elytra with 3 costæ (at least) evident. .... *piceus* Kirby.
- 18. Elytra with a few subobsolete costæ.
- 19. Form more convex, punctures larger than in 17. .... *Pascoei* MacL.

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\* *P. nigricornis* Champ., is unknown to me, but seems only to present some slight colour-variations from *P. costatus* MacL., from the same region.

\*20. Elytra parallel at basal two-thirds, length to breadth as 5 : 3.

*abdominalis* Lea.

γ Disconnected and anomalous forms.

21. Elytra seriate-granulate, size large..... *raucus* Blackb.

22. Elytral costæ partly broken into series of granules..... *arcanus* Pasc.

23. Elytral costæ entire, size small, 15 mm., form very oval (length to breadth as 5 : 3) ..... *insularis* Brême.

24. Elytral costæ horizontally undulate, length to breadth as 4 : 3

*undulatus*, n.sp.

25. Elytral costæ obsolete, intervals and punctures subobsolete.

*dispar* Pasc.

26. Anterior angles of prothorax produced outwards and forwards into a round wide lobe..... *sinuaticollis* Macl.

δ 27. (29) Length to breadth as 7 : 4.

28. Prothorax wider than elytra at base, alternate intervals raised.

*laticollis* Macl.

29. Prothorax not wider than elytra at base, alternate intervals not raised.

*hepaticus* Pasc.

#### Table of *Fterohelvus* (Macleay's Section ii.).

Form elongate or oblong-oval. Elytra more or less narrowly margined.

Subsection i. Elytra seriate-punctate; intervals more or less costate.

1. (9) Size large, 20 mm. long.

2. (12) Disc of pronotum smooth or finely punctate.

3. (5) Sides of prothorax sinuate anteriorly.

4. Upper surface strongly pilose. .... *hirtus* Macl.

† 5. Upper surface smooth. .... (?) *Reichei* Brême.

6. (17) Sides of prothorax evenly rounded.

7. Sternum smooth. .... *elongatus* Macl.

8. Sternum granulate.

9. Granules of sternum fine. .... *depressiusculus* Macl.

\* *P. pruinosus* Pasc., is impossible to identify from the description; so far as it goes, however, it must be very near *P. abdominalis* Lea, which may prove to be synonymous with it. The "fine uniform whitish exudation" mentioned by Pascoe, is common to many species of the genus in fresh specimens. *P. Darwiniensis* Macl., as suggested by its author, shows a decided affinity to the insects of Section ii., in its narrow margins. It seems out of place in the above *P. fraternus* Blackb., (if identified correctly by me), also from description, from its small size, and nearer affinity to forms like *P. vicarius* Pasc., seems more at home in Macleay's Section iii.

† *P. Reichei* Brême, is unknown to me, and may be an abraded form of *P. hirtus* Macl. At least nothing is said in the description as to pilose clothing.

- \*10. Granules of sternum round and coarse, size smaller... (?) *alternatus* Pasc.  
 11. (13) Size medium, 16 mm. long.  
 12. Elytral costæ faint, form wider than 10. .... *Darwiniensis* Mael.  
 13. Disc of pronotum coarsely punctate. .... *puncticollis*, n.sp.  
 14. (16) Size small, 10-14 mm. long.  
 15. Elytral costæ nodular and crenulate. .... *crenulatus* Mael.  
 16. Elytral costæ scarcely nodular and crenulate. .... *septemcostatus*, n.sp.  
 17. Elytra with lines of granules between costæ, size larger than 16.  
*nodulosus*, n.sp.

SARAGUS MASTERSI, n.sp.

Widely ovate, convex, dark brown, slightly nitid, margins paler, legs and underside nearly black.

*Head* flat; epistoma arcuate in front, its angles blunt but subrectangular, sides straight and narrowing to eyes without any limiting suture at base; eyes separated by distance equal to the diameter of one, surface coarsely granulated; antennæ not reaching base of prothorax, third joint as long as fourth and fifth combined, with five apical joints thickened and round. *Prothorax* ( $3 \times 9.5$  mm.), length measured in middle, width at base; circularly emarginate at apex, anterior angles obtuse, enclosing head in front of eyes, sides arcuately widened to base, posterior angles very sharp and deflexed, foliate margins wide and reflexed near edge, width of combined margins to disc as 11:8; edge (seen sideways) laminate, surface of margins roughly and closely granulated; disc slightly convex, closely rugose and scabrous. *Scutellum* curvilinear-triangular, finely granulose. *Elytra* wider than prothorax at base, widest at middle, shoulders obtuse, foliate margins wide but narrowing at apex, undulate at middle and granulose; extreme margins thick and reflexed, edge (seen sideways) convex and much wider than edge of prothorax. Disc very convex, bicostate, with two subparallel carinæ extending from base to apical declivity 3 mm. apart, these bordered on each side with rows of large punctures; surface of disc coarsely, closely

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\* *P. alternatus* Pasc.—If I am correct in my identification of species from Queensland (Cloncurry and Roma), this species has a coarsely granulated sternum, the granules being large and round, rendering its recognition easy.

and rugosely punctate, sometimes obscured by short silky derm; prosternum carinate and finely granulose, abdomen and femora closely and finely punctate, tibiae scabrous, and, with the tarsi, clothed beneath with red tomentum. *Dimensions* 13 × 11·5 mm.

*Hab.*—North-west Australia.

A single specimen, male, in the Macleay Museum, is readily distinguished from the other described species with bicostate elytra by its small size and nearly circular form.

SARAGUS MONTANUS, n.sp.

Moderately elongate-ovate, broad, convex, glabrous, black, nitid.

*Head* deeply sunk into prothorax, closely rugose-punctate; epistoma limited at sides by well marked suture, at base by shallow groove, apex truncate, sides widely rounded, canthus raised and separately curved, eyes widely separated, antennae with third joint shorter than two following combined, apical four joints wider and rounder than preceding, eleventh largest and flattened. *Prothorax* (4 × 11 mm.), length measured at middle, width at base; deeply emarginate in front, sides rounded and converging from base to apex, base trisinuate; posterior angles very acute and deflexed; foliate margins wide and concave, extreme margin thin and slightly reflexed, surface of foliate margins finely rugose, transversely wrinkled at border; disc irregularly and distinctly punctate, central channel only indicated by lævigata line, with two smooth impressions, one at each side near front, two transverse foveate depressions at base near scutellum, basal edge finely serrated near sides. *Scutellum* curvilinear-triangular, punctured as prothorax. *Elytra* thrice as long as prothorax, of same width at base, gradually widening to middle, broadly rounded at apex; humeri obtuse but distinct, bicostate, with two parallel carinae extending from base, abruptly ending before apical declivity, about 3 mm. apart and having rows of large punctures on each side; the suture also raised from the middle to apex; between the suture and each carina are two rows of large punctures with additional and more confused puncturation near scutellum, between each carina and the foliate

margins are eleven similar rows of punctures, these large and regular, separated by a distance of the diameter of one of them. with a larger row of punctures at the junction of the disc with the margins; foliate margins wide, narrowed at apex, flat and smooth, extreme edge narrowly reflexed (seen sideways, laminate). Prosternum carinate, abdomen black, nitid, closely and finely punctate, pleuræ smooth, tibiæ rough, and, with the tarsi, clothed beneath with reddish tomentum, tibial spurs short. *Dimensions* ♂.  $17 \times 12$  mm. : ♀.  $15.5 \times 11$  mm.

*Hab.*—Blackheath, Blue Mountains.

Two specimens are under examination, one undoubtedly male, the other probably female, but without any decided sexual differentiation. The former, taken by myself, the other by Dr. E. W. Ferguson, under Eucalyptus bark. In colour and general form somewhat like *S. Blackburni* MacL., but much smaller, less parallel and convex than that species; otherwise I know no other *Saragus* at all resembling it.

#### SARAGUS FRENCHI, n.sp.

Widely oval, convex, glabrous, nitid, black, antennæ piceous.

*Head*: epistoma semicircular, narrowly raised on margin, strongly and narrowly raised at antennal orbits depressed in front of eyes, these larger and not so widely separated as in *S. brunnipennis* MacL.; head and prothorax very minutely punctured, antennæ of same length as prothorax, apical joints slightly enlarged and rounded. *Prothorax* ( $2.5 \times 7$  mm.) widest at base where it is more than twice as wide as apex, the latter semicircularly emarginate, anterior angles obtuse, posterior acute, sides rapidly narrowing from base to apex. foliate margins wide and deflexed at base, narrower and convex in front, extreme border very narrow at apex and sides, obsolete at base, base very little sinuate, disc without evidence of central line, with minute punctures more evident on margins than on disc. *Elytra* finely and rather irregularly lineate-punctate, with about 17 lines of fine punctures, both punctures and lines obscure and irregular at centre, more distinct and regular towards the sides, with about

three obscurely marked lævigata intervals, equally placed; other intervals very minutely punctured; foliate margins as wide as those of prothorax at base, very little narrowed till the middle, then rapidly narrowing to apex, extreme edge narrow and reflexed, shoulders round, disc separated by a row of larger punctures. *Abdomen* finely longitudinally strigose, apical segments closely punctured, tibiae hairy, tarsi clothed below with red tomentum. *Dimensions*  $11 \times 8$  mm.

*Hab.*—Eucla, South Australia.

Two specimens, both ♂, are before me; the type from Eucla was kindly sent me by Mr. C. French, the other specimen is amongst the specimens examined by me for the Melbourne Museum, and is labelled "Overland Railway, South Australia." It is evidently very close to *S. Macleayi* Blackb., and less closely allied to *S. brunnipennis* Macl., but distinguished from the former by its greater size, and width and different sculpture. Mr. Blackburn distinguishes his species from *S. brunnipennis* "in having its thorax more strongly sculptured and the interstices of its elytra more or less convex." *S. Frenchi* has its prothorax much less strongly sculptured than *S. brunnipennis*, while the interstices of its elytra are not convex, though the lævigata intervals give that appearance in certain aspects. It is easily distinguished from *S. brunnipennis* by its rounder shape, and less pronounced sculpture.

AGASTHENES EUCLENSIS, n.sp. (Fig. 2).

Elongate-ovate, above and below jet black, subnitid, apical joints of antennæ and all tarsi piceous, the latter, together with apex of tibiae, with brown tomentose clothing.

*Head* subtrapezoidal; labrum strongly emarginate and rounded, showing membranous hinge; epistoma truncate and raised, with corners obtusely rounded; sides of head raised and rather straightly widened to the antennal orbits; forehead widely convex and separated from epistoma by a wide nonsulcate depression, closely and finely punctulate; antennæ slender, third joint longer than fourth and fifth combined, 4-7 obconic, 8-10 round and wider, eleventh elongate, flattened and ovoid. *Prothorax* transverse



(4 × 5.5 mm.), widest behind middle, apex circularly emarginate, anterior angles acute, strongly produced forward and a little outward, sides widely sinuate anteriorly, more abruptly behind, posterior angles widely acute (about 80°), subdentate and deflexed, base a little trisinate, and, together with the apex, very narrowly bordered; sides with a thick round raised border abruptly ending at both angles; lateral margins foliate (wider than in *A. Goudiei* Carter) with the disc more convex, not perceptibly punctured, having two large depressions in front of basal border. *Scutellum* widely triangular, very convex and glabrous. *Elytra* wider than prothorax at base, parallel for two-thirds of their length, rather flat anteriorly, surface uneven with shallow rugosity, rather closely dotted with large shallow punctures connected by short irregular depressed lines; on each elytron three faintly defined equidistant costæ, obsolete at base and apex; shoulders rounded, sides narrowly horizontal and bordered by narrow raised edge. Abdomen shining, finely longitudinally strigose, the metasternum sulcate in the middle, the prosternum narrowly convex and produced behind, mentum and submentum strongly punctured, the tooth of the latter small, front and intermediate tibiæ slightly curved, all tibiæ with a few scattered reddish hairs and strongly punctulate, anterior tarsi transverse, posterior tarsi with basal joint nearly as long as the rest combined. *Dimensions* 15 × 6 mm.



Fig. 2.

*Hab.*—Eucla, South Australia.

A single specimen, ♂, has been sent by Mr. C. French since my last paper was written. It is nearest to *A. Goudiei* Carter, but differs most markedly in the following characters: (1) size smaller; (2) prothorax with anterior angles less directed outwards, less widely rounded, and deflected, not produced outwards at the posterior angles; (3) elytra more deeply punctured, with more evident costæ. Type in the author's collection.

## AGASTHENES CHAMPIONI, n.sp. (Fig. 3).

Elongate, subparallel smooth, subnitid, oral organs and antennæ reddish.

*Head* more finely and closely punctured than in *A. Westwoodi* Bates, its structural characters otherwise similar; antennæ not quite reaching base of prothorax, third joint at least as long as fourth and fifth combined, cylindrical, 4-10 successively wider and shorter, obconic, eleventh elongate-oval, four apical joints lighter red. *Prothorax* ( $5 \times 7$  mm.), length in middle, widest behind middle, base half as wide again as apex, widely emarginate at apex, anterior angles acute (less acute and more outwardly directed than in *A. Westwoodi*), sides widening in a regular curve to beyond half-way, then rather suddenly narrowing and widely sinuate before the acute posterior angle, this produced obliquely outwards and backwards into a blunt tooth-base thinly margined, apex moderately margined at sides only, sides thickly margined; disc minutely and closely punctured (punctures more evident than in *A. Westwoodi*), otherwise smooth. *Scutellum*



Fig. 3.

transverse, triangular. *Elytra* ( $10.5 \times 7$  mm.) wider than prothorax at base, shoulders much more squarely rounded, with margins more raised than in *A. Westwoodi*, sides subparallel till near apex, convexity as in *A. Westwoodi*, suture depressed, lateral gutter more defined and wider than in *A. Westwoodi*, with about three obscurely marked depressions, even more minutely punctured than in *A. Westwoodi*, with the lateral row of large punctures continued almost to apex. Abdomen faintly strigose, submental teeth bluntly rounded, submentum much less coarsely and more sparsely punctured than in *A. Westwoodi*; other characters very similar to those of Bates' species. *Dimensions* ♂.  $17 \times 7$  mm.: ♀.  $19 \times 8$  mm.

*Hab.*—Overland railway route E. of Wunbering Rocks, South Australia.



Two specimens occur amongst the Tenebrionidæ examined from the French Collection, Melbourne Museum. This fine species, while nearest to *A. Westwoodi* Bates, can readily be distinguished by its smaller size, more parallel elytra, and the widely different form of the prothorax. The most marked difference lies in the oblique, prominent, posterior angles, with the regular deep sinuation at the sides. In *A. Westwoodi* these angles are wider, less prominent, and meet the incurved sides more abruptly. I have much pleasure in naming it after my friend, Mr. G. C. Champion, to whose courtesies and assistance I am much indebted. Type in National Museum, Melbourne.

Table of described species of *Agasthenes*.

- A. Anterior angles of prothorax acute.
- B. Size large (more than 20 mm. long)..... *Westwoodi* Bates.
- BB. Size smaller (less than 20 mm. long).
- C. Prothorax widest near middle.
- D. Sides of prothorax not sinuate anteriorly..... *Championi* Carter.
- DD. Sides of prothorax sinuate anteriorly.
- E. Posterior angles of prothorax deflexed..... *euclensis* Carter.
- EE. Posterior angles of prothorax directed outwards.
- Goudiei* Carter.
- CC. Prothorax widest near base..... *Freuchi* Carter.
- AA. Anterior angles of prothorax not acute..... *Stephensi* Carter.

*ADELUM FERGUSONI*, n.sp. (Fig. 4).

Rather widely ovate and flat, dark copper-bronze with a highly polished metallic lustre; oral organs, antennæ, and tarsi reddish; under side metallic black with bluish reflections.

*Head* with labrum very prominent, epistoma evenly rounded, flattish and limited behind by defined circular suture, closely and coarsely punctured, rugose on forehead; eyes transverse and prominent; antennæ extending to base of prothorax, third joint subcylindric and little longer than the fourth, joints 4-10 successively wider, obconic, 8-10 distinctly wider than preceding, eleventh largest, elongate-ovoid. *Prothorax* transverse (2 × 3.1 mm.), arcuate-emarginate at apex, truncate at base, base and apex about the same width, widest behind middle, moderately

convex, anterior angles distinct and subrectangular, sides strongly rounded, rapidly widening, sinuately contracting before the wide dentate rectangular posterior angles; these a little deflexed; marginal lobes separated by a groove strongly defined anteriorly but not foliaceous (*i.e.*, sculpture of disc continuous to sides), the whole closely and coarsely punctured with finely rugose intervals in places; medial channel distinct throughout, surrounded by a smooth narrow raised border, most evidently raised at the posterior angles. *Scutellum* small, transverse, triangular. *Elytra* considerably wider than prothorax at base and nearly thrice as long, oval with base subtruncate, humeri rather squarely rounded but prominent; punctate-striate, with eight deeply grooved striae on disc and two more on sides; punctures in grooves close and small, scarcely evident towards middle, intervals rather flat in centre of disc, becoming strongly convex laterally, and themselves closely and distinctly punctured. Prosternum, undersides of prothorax, margins and epipleurae strongly punctured, apical segment of abdomen finely punctured, intercoxal process widely rounded, tibiae and basal joints of tarsi clothed beneath with fine yellowish hair. *Dimensions* 10 × 4 mm.



Fig. 4.

*Hab.*—Kuranda, North Queensland.

Two specimens, probably the two sexes, have been generously given to me by Dr. E. W. Ferguson, who captured them. The only sexual difference I can detect, is the slightly longer antennae of the specimen which I take to be the male. It is an aberrant member of Section ii., Subsection D (These Proceedings, 1908, p. 276) in that its elytral intervals are distinctly convex towards the sides, and the elytra are deeply striate; and, moreover, distinguished from all of them by its brilliant metallic colour, and its very pronounced hind angles to prothorax. Type in author's coll.

*Stigmodera pallidipennis* Blackb.—Since writing my notes (These Proc., 1909, p.121), Mr. Blackburn has shown me the type of this species. It is quite distinct from *S. mustelamajor* Thoms. I was misled by assuming the specimens in the Macleay Museum to be correctly named.

*Espites basalis* Pasc.—I have received two specimens of this beautiful insect from Cape York; and have also seen specimens collected by Mr. Hacker, while Mr. Lea has since sent me a specimen for identification, also from the same region. It was described from New Guinea, and has hitherto not been recorded as an Australian species.

*Cardiothorax pygmaeus* Carter.—I found this species fairly common on the hills near Twofold Bay during a short stay in January last. Fresh specimens are darker in general colour than the Macleay Museum types, but this colour is relieved by the raised golden interstices of the elytra near the humeral margins, this gold or coppery sheen decreasing towards the middle of the disc. Larger female specimens are nearly as large as specimens of *C. australis* Carter, but it may be readily distinguished by the more abrupt and distinct dentation of the hind angles of the prothorax.